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SESSIONAL PAPERS

VOLUME 11

THIRD SESSION OF THE NINTH PARLIAMENT

OF THE

DOMINION OF CANADA

SESSION 1903

VOLUME XXXVII

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2. Public Accounts of Canada, for the fiscal year ended 30th June, 1902. Presented 13th March, 1903. by Hon. W. S. Fielding..... . . . . *Printed for both distribution and sessionnl papers.*

3. Estimates of the sums required for the services of Canada, for the year ended 30th June, 1904. Presented 16th March, 1903, by Hon. W. S. Fielding.. *Printed for both distribution and sessional papers.*

4. Supplementary Estimates for the year ending 30th June, 1903. Presented 31st March, 1903, by Hon. W. S. Fielding..... ..... *Printed for both distribution and sessional papers.*

5. Further Supplementary Estimates for the year ending 30th June, 1903. Presented 17th June, 1903, by Hon. W. S. Fielding..... ..... *Printed for both distribution and sessional papers.*

5*a*. Supplementary Estimates for the year ending 30th June, 1904. Presented 1st October, 1903, by Hon. W. S. Fielding... . ...*Printed for both distribution and sessional papers.*

5*b*. Further Supplementary Estimates for the year ending 30th June, 1904. Presented 14th October, 1903, by Hon. W. S. Fielding..... .. ..*Printed for both distribution and sessional papers.*

5*c*. Further Supplementary Estimates for the year ending 30th June, 1904. Presented 21st October, 1903, by Hon. W. S. Fielding..... .*Printed for both distribution and sessional papers.*

6. List of Shareholders in the Chartered Banks of Canada, as on 31st December, 1902. Presented 20th April, 1903, by Hon. W. S. Fielding.
Printed for both distribution and sessional papers.

7. Report of dividends remaining unpaid, unclaimed balances and unpaid drafts and bills of exchange in Chartered Banks of Canada, for five years and upwards, prior to December 31, 1902. Presented 1st June, 1903, by Hon. W. S. Fielding .....*Printed for both distribution and sessional papers.*

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8. Report of the Superintendent of Insurance, for the year ended 31st December, 1903. Presented 21st August, 1903, by Hon. W. S. Fielding.. .... *Printed for both distribution and sessional papers.*

9. Abstract of Statements of Insurance Companies in Canada, for the year ended 31st December, 1902. Presented 6th April, 1903, by Hon. W. S. Fielding.
Printed for both distribution and sessional papers.

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10. Report of the Department of Trade and Commerce, for the fiscal year ended 30th June, 1902. Presented 16th March, 1903, by Sir Richard Cartwright.
Printed for both distribution and sessional papers.

10a. Correspondence in connection with the German tariff. Presented 16th April, 1903, by Hon. W. S. Fielding. . . . . *Printed for distribution.*

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11. Tables of the Trade and Navigation of Canada, for the fiscal year ended 30th June, 1902. Presented 13th March, 1903, by Hon. W. Paterson..... *Printed for both distribution and sessional papers.*

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12. Inland Revenues of Canada. Excise, etc., for the fiscal year ended 30th June, 1902. Presented 13th March, 1903, by Hon. M. E. Bernier..... *Printed for both distribution and sessional papers.*

13. Inspection of Weights, Measures, Gas and Electric Light, for the fiscal year ended 30th June, 1902. Presented 13th March, 1903, by Hon. M. E. Bernier.
Printed for both distribution and sessional papers.

14. Report on Adulteration of Food, for the fiscal year ended 30th June, 1902. Presented 13th March, 1903, by Hon. M. E. Bernier. .... *Printed for both distribution and sessional papers.*

15. Report of the Minister of Agriculture, for the year ended 31st October, 1902. Presented 13th March, 1903, by Hon. W. S. Fielding..... *Printed for both distribution and sessional papers.*

16. Report of the Director and Officers of the Experimental Farms, for the year 1902. Presented 28th April, 1903, by Hon. W. S. Fielding..... . ..... *Printed for both distribution and sessional papers.*

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17. Criminal Statistics for the year ended 30th September, 1902. Presented 12th October, 1903, by Hon. S. A Fisher..... .... *Printed for both distribution and sessional papers.*

18. Report on Canadian Archives, 1902. Presented 25th June, 1903, by Hon. S. A. Fisher.
Printed for both distribution and sessional papers.

19. Report of the Minister of Public Works, for the fiscal year ended 30th June, 1902. Presented 12th March, 1903, by Hon. J. Sutherland..... *Printed for both distribution and sessional papers.*

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20. Annual Report of the Department of Railways and Canals, for the fiscal year ended 30th June, 1902, Presented 16th June, 1903, by Hon. A. G. Blair... *Printed for both distribution and sessional papers.*

21. Report of the Department of Marine and Fisheries (Marine), for the fiscal year ended 30th June, 1902. Presented 19th March, 1903, by Hon. J. R. Préfontaine.
Printed for both distribution and sessional papers.

21a. Fourth Annual Report of the Geographic Board of Canada, 1902.
Printed for both distribution and sessional papers.

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21b. List of Shipping issued by the Department of Marine and Fisheries, being a List of Vessels on the registry books of Canada, on the 31st December, 1902. Presented 5th August, 1903, by Hon. J. R. Préfontaine.... .... *Printed for both distribution and sessional papers.*

22. Report of the Department of Marine and Fisheries (Fisheries), for the fiscal year ended 30th June, 1902. Presented 13th March, 1903, by Hon. J. R. Préfontaine.
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23. Report of the Harbour Commissioners, etc., 1902... *Printed for both distribution and sessional papers.*

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24. Report of the Postmaster General, for the year ended 30th June, 1902. Presented 13th March, 1903, by Sir William Mulock ..... *Printed for both distribution and sessional papers.*

25. Annual Report of the Department of the Interior, for the fiscal year ended 30th June, 1902. Presented 13th March, 1903, by Hon. C. Sifton..... *Printed for both distribution and sessional papers.*

25*a*. Irrigation in the North-West Territories of Canada. Issued by the Department of the Interior. *Printed for both distribution and sessional papers.*

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26. Summary Report of the Geological Survey Department for the calendar year 1902. Presented 8th October, 1903, by Sir Wilfrid Laurier .... *Printed for both distribution and sessional papers.*

27. Annual Report of the Department of Indian Affairs, for the fiscal year ended 30th June, 1902. Presented 13th March, 1903, by Hon. C. Sifton.. .... *Printed for both distribution and sessional papers.*

27*a*. Schedule of Indian Reserves in the Dominion. Supplement to Annual Report of the Department of Indian Affairs, 1902 .... *Printed for both distribution and sessional papers.*

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28. Report of the North-West Mounted Police, 1902. Presented 16th March, 1903, by Sir Wilfrid Laurier. *Printed for both distribution and sessional papers.*

29. Report of the Secretary of State of Canada, for the year ended 31st December, 1902. Presented 18th March, 1903, by Sir Wilfrid Laurier..... *Printed for both distribution and sessional papers.*

29*a*. Papers relating to a conference between the Secretary of State for the Colonies and Prime Ministers of self-governing Colonies. Colonial Conference, 1902. Presented 9th June, 1903, by Sir Wilfrid Laurier..... .. .. *Printed for both distribution and sessional papers.*

29*b*. Report of the Commission to inquire into the Martineau defalcation, etc. Presented 15th June, 1903, by Hon. W. S. Fielding..... .....*Printed for both distribution and sessional papers.*

29*c*. Statement by the Auditor General, on the Report of the Commission to inquire into the Martineau defalcation. Presented 4th August, 1903, by Hon. W. S. Fielding. *Printed for both distribution and sessional papers.*

29*d*. Correspondence with the Auditor General *re* Treasury Board regulations arising from the Martineau defalcations. Presented 25th September, 1903, by Hon. W. S. Fielding. *Printed for both distribution and sessional papers.*

30. Civil Service List of Canada, 1902. Presented 18th March, 1903, by Sir Wilfrid Laurier. *Printed for both distribution and sessional papers.*

31. Report of the Board of Civil Service Examiners, for the year ended 31st December, 1902. Presented 25th March, 1903, by Hon. W. S. Fielding.. .... *Printed for both distribution and sessional papers.*

32. Annual Report of the Department of Public Printing and Stationery, for the year ended 30th June, 1902. Presented 8th April, 1903, by Sir Wilfrid Laurier. *Printed for both distribution and sessional papers.*

33. Report of the Joint Librarians of Parliament for the year 1902. Presented 12th March, 1903, by the Hon. The Speaker..... .....*Printed for sessional papers.*

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34. Report of the Minister of Justice as to Penitentiaries of Canada, for the year ended 30th June, 1902, Presented 13th March, 1903, by Hon. C. Fitzpatrick. *Printed for both distribution and sessional papers.*

35. Report of the Department of Militia and Defence of Canada, for the year ended 31st December, 1902. Presented 23rd March, 1903, by Sir Frederick Borden. *Printed for both distribution and sessional papers.*

35*a*. Further Supplementary Report of the Department of Militia and Defence :—Organization, equipment, despatch and service of the Canadian Contingents during the war in South Africa, 1899-1902. *Printed for both distribution and sessional papers.*

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36. Report of the Department of Labour, for the year ended 30th June, 1902. Presented 17th March, 1903, by Sir William Mulock.. ..... *Printed for both distribution and sessional papers.*

36a. Report of the Royal Commission on Industrial Disputes in the province of British Columbia Presented 24th August, 1903, by Sir William Mulock.
Printed for both distribution and sessional papers.

37. Statement of Governor General's Warrants issued since the last session of parliament, on account of the fiscal year 1902-1903. Presented 13th March, 1903, by Hon. W. S. Fielding.. ... ..*Not printed.*

38. Statement in pursuance of section 17 of the Civil Service Insurance Act, for the fiscal year ending 30th June, 1902. Presented 16th March, 1903, by Hon. W. S. Fielding..... *Not printed.*

39. Statement of all superannuations and retiring allowances in the civil service during the year ended 31st December, 1902, showing name, rank, salary, service, allowance and cause of retirement of each person superannuated or retired, also whether vacancy filled by promotion or by new appointment, and salary of any new appointee. Presented 16th March, 1903, by Hon. W. S. Fielding.
Not printed.

40. Statement of receipts and expenditures of the Ottawa Improvement Commission, for the fiscal year ended 30th June, 1902. Presented 16th March, 1903, by Hon. W. S. Fielding.....*Not printed.*

41. Return showing the expenditure on account of unforeseen expenses from the 1st July, 1902, to the 12th March, 1903. Presented 16th March, 1903, by Hon. W. S. Fielding..... .... *Not printed.*

42. Return of over-rulings by the treasury board of the auditor general's decisions between the commencement of the session of 1902 and that of 1903. Presented 16th March, 1903, by Hon. W. S. Fielding . ...*Not printed.*

43. Statement of the affairs of the British Canadian Loan and Investment Company, as on the 31st December, 1902. Presented 17th March, 1903, by the Hon. The Speaker.....*Not printed.*

44. Ordinances of the Yukon for 1902. Presented 18th March, 1903, by Sir Wilfrid Laurier.
Not printed.

45. Return of orders in council which have been published in the *Canada Gazette* between 1st January and 31st December, 1902, in accordance with the provisions of section 52 of the North-west Irrigation Act, chapter 35 of 61 Victoria. Presented 20th March, 1903, by Sir William Mulock.
Not printed.

46. Return of orders in council which have been published in the *Canada Gazette* between 1st January and 31st December, 1902, in accordance with the provisions of clause 91 of the Dominion Lands Act, chapter 54 of the Revised Statutes of Canada and its amendments. Presented 20th March, 1903, by Sir William Mulock..... .... *Not printed.*

47. Return of orders in council which have been published in the *Canada Gazette* and in the *British Columbia Gazette*, between 1st January and 31st December, 1902, in accordance with the provisions of subsection (*d.*) of section 38 of the regulations for the survey, administration, disposal and management of Dominion lands within the 40-mile railway belt in the province of British Columbia. Presented 20th March, 1903, by Sir William Mulock.... ....*Not printed.*

48. Return (in so far as the Department of the Interior is concerned) of copies of all orders in council, plans, papers and correspondence which are required to be presented to the House of Commons, under a resolution passed on 20th February, 1882, since the date of the last return under such resolution. Presented 20th March, 1903, by Sir William Mulock..... .. *Not printed.*

49. Return to an order of the House of Commons, dated 23rd March, 1903, showing the total cost of taking of the Census for 1871, 1881, and 1891. Also the amount paid on account of the taking of the Census for 1901, up to 1st March, 1903. Also a statement showing the nature of the information given in the Census of 1891 and of 1901, and the mode of remuneration of the enumerators on each occasion. Presented 27th March, 1903.—*Mr. Sproule*..... .....*Not printed.*

50. Return to an address of the House of Commons, dated 16th March, 1903, for copies of all correspondence exchanged since last session between the Canadian government and the British authorities on the subject of the embargo on Canadian cattle. Presented 27th March, 1903.—*Mr. Monet.*
Printed for both distribution and sessional papers.

51. Return to an address of the House of Commons, dated 16th March, 1903, for copies of all petitions, orders in council, correspondence, documents and papers in connection with the conviction and imprisonment of one Arthur Brunet, of the city of Montreal, convicted of offences against the Dominion Elections Act, 1900; and the pardon, reprieve, or release of the said Arthur Brunet from jail. Presented 1st April, 1903.—*Mr. Casgrain* ....*Not printed.*

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51*a*. Supplementary return to No. 51. Presented 14th April, 1903 ..... *Not printed.*

52. Return to an address of the House of Commons, dated 16th March, 1903, for copies of all contracts, agreements, deeds, correspondence, documents and papers in connection with the establishment in the city of Quebec of a factory for the manufacture of rifles, by Sir Charles Ross, or by Sir Charles Ross and others. Presented 1st April, 1903.—*Mr. Casgrain*..... *Not printed.*

53. Return showing remissions of interest made under section 141, as added to the Indian Act by section 8, chapter 35, 58-59 Victoria, for the year ended 30th June, 1902. Presented 7th April, 1903, by Sir William Mulock ..... *Not printed.*

54. Papers in connection with the representation of the province of New Brunswick in the House of Commons, as follows:—1. Minute of executive council of New Brunswick, 18th March, 1903. 2. Letter to Sir Wilfrid Laurier from sub-committee of the executive council of New Brunswick, supplementing minute of council on above subject. 3. Report of privy council, 6th April, 1903. Presented 8th April, 1903, by Hon. C. Fitzpatrick..... *Not printed.*

55. Return of all lands sold by the Canadian Pacific Railway Company, from the 1st October, 1901, to the 1st October, 1902. Presented 8th April, 1903, by Sir William Mulock..... *Not printed.*

56. Return to an order of the House of Commons, dated 23rd March, 1903, for a statement giving:—1. The names of all immigration agents employed by the government in foreign countries. 2. The names of the countries wherein each of such agents does his work. 3. The place of residence of each one of such agents. 4. The salary paid to each one of them. 5. The travelling expenses paid to each one of them. 6. The office expenses and other expenses made or incurred by each one of such agents during the last year of his employment. Presented 8th April, 1903.—*Mr. Bourassa.*
Not printed

57. Return to an order of the House of Commons, dated 30th March, 1903, for a statement of all moneys paid by the government, or in its behalf, to any newspapers in the Yukon district, since the 30th of June last; stating the names of the newspapers. Presented 8th April, 1903.—*Mr. Monk* and *Sir Charles Hibbert Tupper* ..... *Not printed.*

58. Return to an order of the House of Commons, dated 16th March, 1903, for copies of all documents, letters, correspondence and papers in connection with the establishment in London of a law library for the use of counsel retained in cases before the judicial committee of the privy council. Presented 8th April, 1903.—*Mr. Casgrain*..... *Not printed.*

59. Annual return under chapter 131 R.S.C., intituled: "An Act respecting Trade Unions." Presented 15th April, 1903, by Sir Wilfrid Laurier ..... *Not printed.*

60. Return of the names and salaries of all persons appointed to or promoted in the several departments of the civil service, during the calendar year 1902. Presented 15th April, 1903, by Sir Wilfrid Laurier..... *Not printed.*

61. Detailed statement of all bonds and securities registered in the department of the secretary of state of Canada, since last return, 19th February, 1902, submitted to the parliament of Canada under section 23, chapter 19 of the Revised Statutes of Canada. Presented 15th April, 1903, by Sir Wilfrid Laurier..... *Not printed.*

62. Royal Commission *re* the Tobacco Trade of Canada. Report of the Commissioner. Presented 16th April, 1903, by Hon. H. G. Carroll ..... *Printed for both distribution and sessional papers.*

63. Return to an address of the House of Commons, dated 23rd March, 1903, for copies of all correspondence, orders in council, or applications, relating to or concerning the grant or concession to A. N. C. Treadgold, or to the Hydraulic Mining Syndicate, either separately or associated with A. N. C. Treadgold, of claims, rights or privileges, on Bonanza, Bear, and Hunker Creeks, or their tributaries, or elsewhere in the Yukon. Presented 16th April, 1903.—*Mr. Bell.*
Printed for both distribution and sessional papers.

63*a*. Copy of instructions to the commissioner to conduct a public inquiry in relation to the grant or concession in the Yukon territory to A. N. C. Treadgold or others. Presented 8th June, 1903, by Sir Wilfrid Laurier. ..... *Not printed.*

64. Return to an order of the House of Commons, dated 6th April, 1903, showing: 1. The quantity of vegetables entered at the custom-house at Montreal, as imported from the United States, from the first of February, 1902, to the first of March, 1903. 2. The quantity of vegetables entered at the custom-house at Toronto, as imported from the United States, from the first of February, 1902, to the first of March, 1903. 3. The amount of duty levied and collected in each case respectively. Presented 20th April, 1903.—*Mr. Borden* (*Halifax*). ..... *Not printed.*

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65. Joint report of the survey and remonumenting of the Quebec-New York International Boundary—W. F. King, Chief Astronomer (Canada); Edward A. Bond, State Engineer and Surveyor, New York (U.S.). Presented 20th April, 1903, by Sir William Mulock.....*Printed for sessional papers.*

66. Return to an address of the Senate, dated 19th March, 1903, for copies of all orders in council disallowing acts passed by the different legislatures from the date of the last return made to parliament, together with copies of the reports to council of ministers of justice giving the reasons for such disallowance. Presented (Senate) 17th April, 1903.—*Hon. Sir Mackenzie Bowell*..... *Not printed.*

67. Return to an address of the Senate, dated 20th March, 1903, for copies of all correspondence between the government of the Dominion and the governments of the different provinces, and of the territorial government of the North-west Territory, relating to the disallowance of any act passed by such governments from the date of the last return made to parliament. Presented (Senate) 17th April, 1903.—*Hon. Sir Mackenzie Bowell*.....*Not printed.*

68. Return to an address of the House of Commons, dated 30th March, 1903, for copies of the correspondence exchanged between the government and the different provincial legislatures on the subject of the increase of the subsidies paid to the provinces in virtue of the British North America Act. Presented 27th April, 1903.—*Mr. Lemieux*.....*Printed for sessional papers.*

69. Return to an order of the House of Commons, dated 23rd March, 1903, for copies of all correspondence between the government, or any member of the government, and W. W. Fitzgerald, of Grenfell, Assa., or any one in his behalf, regarding his homestead and pre-emption, which were cancelled. Presented 27th April, 1903. *Mr. Sproule*.....*Not printed.*

70. Return to an order of the House of Commons, dated 23rd March, 1903, for copies of all correspondence, letters, documents, etc., relating to the difficulties in regard to the Indian reserve of Doncaster, in the county of Terrebonne. Presented 27th April, 1903.—*Mr. Desjardins*..... *Not printed.*

71. Return to an order of the House of Commons, dated 23rd March, 1903, for copies of all correspondence, letters and documents relating to the request made to the federal government in connection with the building of a post office in the town of Terrebonne, county of Terrebonne. Presented 27th April, 1903.—*Mr. Desjardins*.....*Not printed.*

72. Return to an order of the House of Commons, dated 30th March, 1903, for a statement showing in detail amounts of money paid to newspapers, newspaper companies, newspaper owners, or agents of publicity, in the United Kingdom, France, or the United States, since the 30th of June last. Presented 28th April, 1903.—*Mr. Monk*.....*Not printed.*

72*a*. Supplementary return to No. 72. Presented 15th May, 1903.....*Not printed.*

73. Return to an order of the House of Commons, dated 30th March, 1903, for a statement showing: 1. The total amount paid to date by the government to the Grand Trunk Railway Company, for a lease of line from Ste. Rosalie to Montreal. 2. Total amount paid to date by the same to the same, for crossing facilities over the Victoria bridge. 3. Total amount paid from the same to the same, as the government's share of improved terminal facilities at Bonaventure depot. Presented 28th April, 1903.—*Mr. Monk*.....*Not printed.*

74. Return to an order of the House of Commons, dated 9th April, 1902, showing: 1. The number of cattle, sheep and horses killed by engines on all Canadian railways during each year since 1890; *(a.)* at points of intersection of highways; *(b.)* elsewhere on the lines. 2. How many engines and cars, if any, were derailed or disabled on all Canadian railways during each year since 1890, owing to their striking cattle, sheep and horses; *(a.)* at points of intersection of highways; *(b.)* elsewhere on the lines. 3. How many railway employees and passengers, if any, were killed or injured on all Canadian railways during each year since 1890, on account of engines striking cattle, sheep and horses; *(a.)* at points of intersection of highways; *(b.)* elsewhere on the lines. 4. What is the total estimated value of the cattle, sheep and horses killed on all Canadian railways, during each year since 1890; owing to their being struck by engines. 5. What is the total estimated damage to rolling stock and other railway property on all Canadian railways during each year since 1890, caused by collisions with cattle, sheep and horses. 6. How many trains have been derailed or partly derailed on all Canadian railways during each year since 1890, owing to the action of frost on the road-bed at points where the old pit cattle-guards were in existence. Presented 28th April, 1903.—*Mr. Erb.*
Printed for sessional papers.

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75. Return to an address of the House of Commons, dated 30th March, 1903, for copies of all plans and specifications submitted for approval by the Montreal Subway Company; copies of the order in council, if any, approving of such plans. Also of any report of the progress of the work; statement showing the amount of money spent on the undertaking; the amount of the deposit made by the company; and all papers or correspondence relating to the enterprise. Presented 28th April, 1903. —*Mr. Tarte* ..... *Not printed.*

76. Return to an address of the House of Commons, dated 6th April, 1903, of all papers, documents and correspondence between the department of railways and canals, the department of justice, the treasury board and the auditor general, or between any of them, relating to the promotion of Mr. F. A. Dixon to the rank of chief clerk, at a salary of $1,800 a year; to take effect from July 1, 1902, and the payment of said salary; and including amongst other papers the report of the deputy head of the department of railways and canals, as provided for by subsection (A) of section 15 of the Civil Service Act; the minute or memorandum of concurrence of the minister of railways in said report; and a copy of the order in council creating such chief clerkship; pursuant to section 15 of said Act, and of the order in council in this matter of May 20th, 1902; and including all papers, documents, letters and proceedings in this matter, referred to on pages A—49, 50, 51, 52, 53, 54 and 55 of the Auditor General's Report for the year ending June, 1902. Presented 28th April, 1903.—*Mr. Lennox*..... ..... *Not printed.*

77. Return to an order of the House of Commons, dated 6th April, 1903, for copies of all telegrams, reports, letters, photographs, and correspondence, of every description, between the department of agriculture, and any person, or persons, whatsoever, relevant to the outbreak of hog cholera in the township of Yarmouth, Ontario. Presented 28th April, 1903.—*Mr. Ingram*..... . .*Not printed.*

78. Return to an address of the House of Commons, dated 30th March, 1903, for copies of all orders in council, correspondence, despatches and documents, relating to the disallowance by the governor in council of statutes of the province of British Columbia, during the past five years. Presented 30th April, 1903.—*Mr. Borden (Halifax)*..... ..*Printed for both distribution and sessional papers.*

78*a*. Supplementary return to No. 78. Presented 7th May, 1903.
Printed for both distribution and sessional papers.

79. Return to an address of the House of Commons, dated 2nd April, 1903, for copies of all judgments or opinions delivered by the supreme court of Manitoba, touching the alleged rights of exemption from taxation, claimed by the Canadian Pacific Railway Company, in respect of the land of the said company, in the North-west Territories, or in Manitoba. Presented 30th April, 1903.—*Mr. Borden (Halifax)*..... *Printed for sessional papers.*

80. Return to an order of the House of Commons, dated 2nd April, 1903, showing all correspondence between the inland revenue department and manufacturers of automatic grain-weighers, used on threshing machines, in Manitoba and the North-west Territories. Between the inland revenue department and inventors of automatic grain-weighers for threshing machines. Between the inland revenue department and thresher men using automatic grain-weighers, in Manitoba and the North-west Territories. Also a copy of report of chief inspector and scale architect *re* the Standard Grain-weigher, manufactured by the Globe Manufacturing Company of Winnipeg. Presented 30th April, 1903.—*Mr. Stewart*..... *Not printed.*

81. Return to an order of the House of Commons, dated 15th April, 1903, for copies of lease made between the Superintendent General of Indian Affairs and S. G. Holbrook and Adam S. Benn for the south half of lot number twelve, concession two, township of Tuscarora, county of Brant, also of lease made by said superintendent general to one Gibson for south half of lot number five, in said township, for better identification, both said half lots belonging to or for the benefit of Indian locatee, Robert S. Sawyer; also of lease or agreement for or in reference to one of said half lots made (previous to said leases to Holbrook and Benn and Gibson) by said superintendent general, or the late Indian agent, Captain Hugh Stewart, to or with one R. Brant; also of all indorsements made on the said leases, or any of them; also of all other agreements or writings made by or between said superintendent general, or Indian agent Daniel J. Lynch, and said Holbrook and Benn in reference to the said lease to them; also of all receipts or acknowledgments made to the department having charge of Indian affairs, or the said Lynch, of or for rent or other payments made by the said Holbrook and Benn, or either of them, under or in connection with the said lease to them, or having reference to or in connection with the lands mentioned therein; also of all letters or correspondence

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between the said department or Indian agent, the late Captain Hugh Stewart and Daniel J. Lynch, and the said Holbrook and Benn, Gibson and Brant, or either or any of them, or from or to either or any of them to the other of them, in reference to or in connection with any or either of the matters or things above mentioned, or in reference to or in connection with a certain order for ten dollars, dated the third of April, nineteen hundred and one, made by said Sawyer on Hugh Stewart, late Indian agent, in favour of said Holbrook; also copies of all letters or correspondence between said department and said Indian agent, Daniel J. Lynch, or by or from either and each to the other, in connection with or in reference to any or either of the said matters or things; also statement in detail showing all moneys received by the said department from said Indian agent, Daniel J. Lynch, for or on account of any of the said matters and things aforesaid, with dates, items and amounts, and for which, and what; and also to or for what, and for and by whom, such money was paid out or applied; also of any petitions, or writings in the nature of petitions, in reference to Indian agent Daniel J. Lynch, and the names of those signing the same; also of all other documents, papers and writings in connection with or in reference to all or any or either of the matters aforesaid. Presented 5th May, 1903.—*Mr. Tisdale*..... *Not printed.*

82. Return to an order of the House of Commons, dated 6th April, 1903, for a statement in detail of amounts paid for travelling expenses, in connection with the Census of 1891, to any census commissioner, in the province of Quebec, since 30th June, 1902: with names of officers to whom such travelling expenses were paid; and the places such officer travelled to Presented 5th May, 1903.—*Mr. Borden (Halifax)*..... *Not printed.*

83. Return to an address of the House of Commons, dated 15th April, 1903, for copy of the contract entered into between the government and the Canadian Construction Company, for enlargement and improvement of the Farran's Point canal, and the profiles, plans, drawings, and specifications in connection therewith; all accounts and claims by the said contractors, for extras or damages under or in connection with this contract: and particularly claims Nos. 8*b*, 9 and 10, made by the contractors. Copy of the order in council of February 5th, 1900, authorizing the payment of $70,309 74 to the Construction Company. And a return of all papers, documents, letters, memoranda, orders in council, and rulings of the honourable the treasury board, in reference to the items 8*b*, lock foundation on rock, $9,588.50; 9, extra unwatering of prism, $7,534.28, as referred to on pages A—24 to A—36, inclusive, of the Auditor General's Report for the year ending 30th June, 1902. Presented 6th May, 1903.—*Mr. Lennox* ..... *Not printed.*

84. Partial return to an order of the House of Commons, dated 16th March, 1903, for copy of the full and each partial report of Half-breed Commissioners for each of their sittings since the first of January, 1900. Also a list of all applications made for scrip, names and residence of applicants whose applications have been received; and class of scrip issued in each case. Also list of all applications made for scrip, names and residence of applicants whose applications were not accepted; and the reason or reasons for refusing the same. Presented 7th May, 1903.—*Mr. LaRivière* ...*Not printed.*

84*a*. Supplementary return to No. 84. Presented 29th June, 1903.

85. Return to an address of the House of Commons, dated 25th March, 1903, for copies of all correspondence received by the government, and of all answers made thereto, concerning the South Eastern Valley Railway, and the United Counties Railway. Also copies of all reports that may have been made regarding the actual condition of such railways. Presented 12th May, 1903.—*Mr. Tarte.* *Not printed.*

86. Return to an order of the House of Commons, dated 4th May, 1903, for copies of all engineers' reports, specifications, estimates and correspondence in reference to surveys made between Rice Lake and Lake Ontario, in connection with the Trent Valley Canal. Presented 12th May, 1903.—*Mr. Ward*..... *Not printed.*

87. Return to an order of the House of Commons, dated 4th May, 1903, showing the rates over the Intercolonial Railway for live stock, coal, lumber, and for freight under classes 1—10, between Stellarton and West River; and between Stellarton and Antigonish, and between Stellarton and Pictou Landing, at present in force. Also showing rates for same classes between same points in 1897. Presented 12th May, 1903.—*Mr. Bell*..... *Not printed.*

88. Return to an order of the House of Commons, dated 4th May, 1903, for a copy of the correspondence, reports, and any other documents, in the department of public works, in respect to the claim of Amable Paradis, of Whitford, Alberta, for the services of a ferry boat and transportation upon the same. Presented 12th May, 1903.—*Mr. LaRivière*..... *Not printed.*

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89. Correspondence in continuation of correspondence already brought down respecting agreement between Australia and the Eastern Extension Company with reference to the Pacific cable. Presented 13th May, 1903, by Sir Wilfrid Laurier..... *Printed for both distribution and sessional papers.*

90. Return to an address of the House of Commons, dated 16th March, 1903, for copies of all papers, documents, letters, correspondence, etc., in relation to the proceedings for the extradition of one John Francis Gaynor, and one Benjamin D. Greene. Presented 13th May, 1903.—*Mr. Casgrain. Not printed.*

91. Return to an order of the House of Commons, dated 2nd April, 1903, for a record of all goods of whatsoever kind entered by the Intercolonial Railway duty free, for use of said railway. Presented 26th May, 1903.—*Mr. Borden (Halifax)* ..... *Not printed.*

92. Return to an address of the House of Commons, dated 30th March, 1903, for copies of all correspondence, orders in council, and other papers, in connection with the prosecution by the custom department, for the scuttling of the schooner *Euxine*, of Margaree Island, while reported on a smuggling expedition, from St. Pierre, Miquelon. Presented 26th May, 1903.—*Mr. McLennan*...*Not printed.*

93. Return to an address of the House of Commons for a copy of the Report of the Committee of the Honourable the Privy Council, approved by the Governor General on the 19th May, 1903, covering the appointment of a Commission, composed of Sir William Van Horne, John Bertram and Harold Kennedy, to report on questions affecting the transportation of Canadian products to the markets of the world through and by Canadian ports, etc. Presented 27th May, 1903. *Mr. Sutherland (Oxford)*..... *Printed for both distribution and sessional papers.*

94. Return to an order of the House of Commons, dated 25th February, 1901, of the following data, correspondence, letters and reports, between General Hutton and Lieutenant-Colonel Sam. Hughes; or concerning the action of the latter in volunteering men for service of the British Empire in connection with the South African struggle. 1. Address, official, Major General Hutton to the District Officers Commanding and Commanding Officers of Regiments, at his first inspection, 1898. 2. Letter, Major General Hutton to Lieutenant-Colonel S. Hughes asking for criticism of and suggestion *re* same. 3. Official reply of Lieutenant-Colonel S. Hughes. 4. Letters, Lieutenant-Colonel Hughes' to General Hutton, *by request, re*:—*(a.)* Canadians in wars of 1812, 1837, 1866, 1870 and 1885, and offering to raise a corps for Imperial service. *(b.)* Copies of former applications to Imperial and Canadian authorities for Colonial assistance in Imperial wars, and renewed offer of service. *(c.)* Plans for Colonial Brigade in Imperial wars; and renewal of offer to raise a corps. 5. Requests, General Hutton to Colonel Hughes, to state his qualifications and record as soldier, and to show why a Permanent Corps officer should not be preferred. 6. Circular letter, General Hutton to Honourable Colonel Gibson and Council of the Dominion of Canada Rifle Association. 7. Reply of Honourable Colonel Gibson to General Hutton. 8. Reply of Council of D.R.A. 9. The plan originally proposed by General Hutton of Annual Camps, making 3 and 4 Military Districts drill in September, while 1, 2, 5 and 6 should drill in June, annually. 10. Report or communication of General Hutton to the Canadian press just prior to the opening of the Session of Parliament, 1899, that no Member of Parliament would be allowed to speak on military questions in the House of Commons, if he were also a militia officer, without permission of General Hutton. 11. Reports, or data, on same subject to the Minister of Militia and Defence. 12. The proposals of General Hutton to amend the law, or regulations and orders, so as to prevent militia officers retaining commission if or while a Member of Parliament. 13. Report by request, Colonel Hughes to General Hutton *re* staff ride. 14. The authority under the law which makes the application of Colonel Hughes, 24th July, 1899, to Honourable Dr. Borden, Minister of Militia, an *irregularity and breach of military discipline*, vide General Hutton to Minister of Militia, 31st July, 1899. 15. Application, Colonel Hughes to General Hutton (through D.O.C.), to raise a corps for Imperial service in the Transvaal, July 24th, 1899. 16. Reports to General Hutton of two militia officers of the city of Toronto and others, stating that few, if any, men or officers could be obtained in Canada for such a service. 17 *(a.)* Application, Col. Hughes to Honourable Dr. Borden, Minister of Militia, July 24, to raise a corps for service in the Transvaal. *(b.)* Reply of the Minister of Militia thereto. *(c.)* Report and papers connected with the application before the Privy Council of Canada. *(d.)* General Hutton's reprimand to Colonel Hughes for applying to the Minister of Militia. *(e.)* General Hutton's letter, July 31st, 1899, to Minister of Militia *re* same. *(f.)* The authority upon which Colonel Foster, C.S.O., based the statement in his letter of September 19th, 1899, to Colonel Hughes, "*after which you withdrew it.*" 18 *(a.)* Application of Colonel Hughes to Right Honourable Joseph Chamberlain to raise a corps in Canada for service in

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Transvaal. *(b.)* An acknowledgment by Mr. Chamberlain. *(c.)* Letters, Military Secretary to His Excellency to General Hutton *re* same. *(d.)* General Hutton (C.S.O.) to Colonel Hughes, August 24, 1899, reprimanding him for having written to Mr. Chamberlain *re* the raising of a corps. *(e.)* Colonel Hughes to General Hutton (C.S.O.), September 2, 1899, in reply. *(f.)* Colonel Foster, C.S.O. to General Hutton, to Colonel Hughes, September 19th, asking him to withdraw the letter of September 2nd, 1899. *(g.)* Complete letter—not an extract—from Colonel Hughes to Colonel Foster, C.S.O. to General Hutton, September 22nd, 1899, in refusal to withdraw the letter of September 2nd. *(h.)* Colonel Foster, C.S.O. to General Hutton, to Colonel Montizambert, D.O.E., Mil. Dis. 3 and 4, October 9th, *re* Hughes' letter of September 2nd *re* having it withdrawn. *(i.)* Letter, Colonel Montizambert, forwarding same to Colonel Hughes and urging withdrawal. *(j.)* Letter, Colonel Hughes to Colonel Montizambert refusing to withdraw the letter, and giving reasons therefor. *(k.)* Letter, Colonel Montizambert to Colonel Foster, C.S.O. to General Hutton, *re* the same. *(a.)* Letter, Colonel Hughes to the press of Canada, *re* troops from Canada for service in the Transvaal, dated September, 1899, referred to in the letter—Colonel Foster, C.S.O. to General Hutton, to Colonel Hughes, September 25th, 1899. *(b.)* Telegram, General Hutton (C.S.O.) to Colonel Hughes, September 25th, 1899, *re* above letter and Section 98, Army Act. *(c.)* Letter, General Hutton (C.S.O.) to Colonel Hughes, *re* same. *(d.)* The evidence upon which General Hutton sent the telegram and the letter of September 25th, 1899. *(e.)* The authority under the law empowering General Hutton to send such letter and telegram. *(f.)* Despatch dictated by General Hutton and published in the London (England) *Times*, stating that in his letter to the Canadian press, Colonel Hughes was *usurping the functions of the Government* of Canada, September 25th, 1899. *(g.)* Despatch, General Hutton to the Canadian press, *re* the same, September 25th, 1899. *(h.)* Despatch, General Hutton to Canadian press, September 28th, 1899, *re* Colonel Hughes being liable to fine or imprisonment under Section 98. *(i.)* Colonel Hughes' telegram in reply to General Hutton (C.S.O.), September 25th, 1899. *(j.)* Letter, Colonel Hughes (September 30th) to General Hutton's (C.S.O.) letter of September 25th, *re* Section 98.—Official. *(k.)* General Hutton's letter to Colonel Foster, October 11th, 1899 *re* Colonel Hughes' letter of September 30th, 1899. *(l.)* Letter, Colonel Foster, C.S.O. to General Hutton, to Colonel Montizambert, October 16th, 1899, threatening to suspend Colonel Hughes from the command of his battalion for writing the letter of September 30th, 1899. *(m.)* The authority under the law, permitting General Hutton to make such threats. *(n.)* Letter, Colonel Montizambert (October 17th, 1899) to Colonel Hughes *re* above. 20. *(a.)* Letter, Colonel Hughes to General Hutton, October 10th, *re* the press reports against Colonel Hughes, dictated by General Hutton. *(b.)* General Hutton (C.S.O.) to Colonel Hughes and to Minister of Militia (October 25th and 26th respectively) *re* above. 21 *(a.)* Colonel Hughes to General Hutton, August 18th, 1899, by request *re* qualification. *(b.)* Reply of General Hutton, August 26th, 1899. *(c.)* Letter, Colonel Hughes to General Hutton, August 28th 1899, in reply to above and to the words of General Hutton: "*You*" Canadians "*might as well try to fly to the moon as to take the field alongside British regulars, short of three years' training, and not then unless led by Imperial officers.*" 22. Letter, Colonel Hughes withdrawing controversial matter on his receiving notification of his appointment to the Transvaal force. 23. Letter, Colonel Hughes to General Hutton, October 23rd, 1899, in friendly parting. 24. Letter, Colonel Hughes to the Right Honourable Sir Wilfrid Laurier, on General Hutton's declining to accept proffered friendliness—demanding that general's recall, October 27th or 28th, 1899. 25. Report of the speech delivered by General Hutton to the officers of the Canadian Contingent in the Chateau Frontenac, Sunday, 29th October, 1899, against Colonel Hughes. 26. Letters of General Hutton to South African British Generals, against Colonel Hughes. 27. Copies of the reports furnished to the press of Canada, Great Britain, the United States and South Africa, against Colonel Hughes by General Hutton's agency, during November and December, 1899 and January and February, 1900. 28. The legal authority for General Hutton to write officially to South African Generals, without the sanction of the Minister of Militia, against Colonel Hughes. 29. Letter of Colonel Hughes from Upington in Gordonia, South Africa, about 30th March, 1900, to Honourable Dr. Borden, Minister of Militia, Canada, correcting errors, omissions, and misstatements in General Hutton's brief as submitted to Parliament last session. 30. The authority under the law permitting General Hutton and Colonel Foster to use personal, unofficial, confidential and private correspondence in official returns. 31. The authority under the law permitting the G.O.C., General Hutton, to receive official correspondence from His Excellency the Governor General, through the Military Secretary. 32. A copy of the "notification to Lieutenant-Colonel Hughes that they, private letters, would be so submitted" by General Hutton, referred to in the letter of

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Lieutenant-Colonel Pinault, March 16th, 1900. 33. The authority under the law forbidding a Canadian who chances to be a militia officer, not of the Permanent Corps, from volunteering to Great Britain to serve in South Africa. 34. The authority under the law authorizing General Hutton, as G. O. C., to reprimand a Canadian militia officer, not on duty, from volunteering to the Minister of Militia of Canada, to raise a corps for the service of Great Britain. 35. The legal authority for General Hutton, through Colonel Foster, *vide* letter of September 19th to Colonel Hughes, to use the language:—"but as officer commanding a Battalion it would, I am sure, be quite impossible for any general to overlook the character of your letter (September 2nd), which from a military point of view, could only be considered as inconsistent with discipline." 36 The legal authority of Major General Hutton for stating (October 9, 1899), "No officer has the right to dispute the authority of the Major General Commanding as his superior officer, or to question his action; still less that of the Governor General, the representative of Her Majesty in Canada." 37. Reports or recommendations of General Hutton producing changes in the command of the R.C.R.I. in 1899. 38. Report of Colonel Herkimer showing that General Hutton declined to treat as official or public, a telegram and a letter written in his capacity as Major General to Colonel Herkimer, the General claiming he had the right to regard them not as official, but private, and that they were not binding on him. 39. The "authority" referred to in the letter of Colonel Hughes to General Hutton (vide D.O.C.,) September 2, 1900, in paragraphs *(a.)* to *(g.)* 40. The following letters and data: *(a.)* General Hutton to Minister of Militia, October, 26, 1899. *(b.)* Colonel Hughes to General Hutton, October 27, 1899. *(c.)* General Hutton (C.S.O.) to Colonel Hughes, October, 28, 1899. *(d.)* General Hutton (C.S.O.) to Colonel Otter *re* Lieutenant-Colonel Hughes going to South Africa, &c., October, 1899, and October, 29, 1899, and October 30, 1899. *(e.)* General Hutton to the Deputy Minister of Militia, November, 14, 1899. *(f.)* Telegram January 31, 1900, C.S.O., to Colonel Sam. Hughes, Cape Town, *re* Strathcona Horse. *(g.)* General Hutton to Minister of Militia, February 2, 1900. Presented 28th May, 1903.—*Mr. Hughes (Victoria).* ..... *Not Printed.*

95. Return to an order of the House of Commons, dated 18th May, 1903, for copies of all papers, letters, telegrams or other documents, relating to the purchase of land for a drill shed in the town of Woodstock, N.B. And also copies of all papers, letters, telegrams or other documents, relating to the construction of a drill shed on said land. Presented 28th May, 1903.—*Mr. Sproule.....Not printed.*

95*a*. Supplementary return to No. 95. Presented 2nd July, 1903..... *Not printed.*

96. Return to an order of the House of Commons, dated 29th May, 1903, for a copy of the Report of the Commissioners appointed to investigate an accident upon the Intercolonial Railway, near Windsor Junction, at 23 o'clock on 11th April, 1903. Presented 29th May, 1903.—*Mr. Clarke.....Not printed.*

97. Return to an order of the House of Commons, dated 18th May, 1903, for a statement setting forth: 1. The quantity of refined sugar imported into Canada from 1st January to 31st December, 1902. 2. The quantity of raw sugar imported during the same period, and giving the name of the country whence such sugar was imported. Presented 1st June, 1903.—*Mr. Marcil (Bonaventure).*
Not printed.

98. Correspondence *re* winter steamers. Presented (Senate) 1st June, 1903, by Hon. R. W. Scott.
Not printed.

99. Return to an address of the Senate, dated 13th May, 1902, for a statement showing: 1. The names of all the persons who have been appointed, or who have been recommended for the position of honorary colonels or honorary lieutenant-colonels in the volunteer force, designating the regiments to which they are or are to be attached, and mentioning the date of each nomination. 2. A statement of the service of each of the persons so appointed or recommended. 3. The names of all persons who have recommended such nominations, together with all the correspondence exchanged on this subject. 4. The names of the persons recommended who have not been appointed, distinguishing persons whose appointment has been refused from persons whose appointment has not yet been decided upon, and giving for each of these persons the cause of the refusal of or the delay in his appointment. Presented (Senate) 28th May, 1903.—*Hon. Mr. Landry.* ..... *Not printed.*

100. Return to an address of the Senate, dated 30th April, 1903, for copies of all correspondence and communications between the various labour organizations, or from any one on their behalf, and the department of labour, relating to the strikes that have occurred during the past year, or relating to any threatened strikes during the past year in Canada. Presented (Senate) 28th May, 1903.—*Hon. Mr. Gibson* ..... *Not printed.*

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101. Return to an order of the House of Commons, dated 5th June, 1903, for a copy of the tenders received for a fast steamship service between Britain and Canada. Presented 5th June, 1903.—*Sir Richard Cartwright*.....*Not printed.*

102. Return to an order of the House of Commons, dated 1st June, 1903, for statement showing: 1. The value of fruit shipped to Europe in cold storage in each of the calendar years 1897, 1898, 1899, 1900, 1901, 1902. 2. The value of fruit shipped in cooled chambers to Europe in seasons 1901 and 1902, respectively. 3. In what further steamers were cooling plants placed in the season of 1902, if any. 4. In what further steamers were mechanical ventilating plants placed in the season of 1902, if any. 5. How much money has the government advanced to date, as bonus or subsidy to steamship companies, to induce them to put in ventilating apparatus, to enable th m to carry in better condition perishable cargo, since 1896. 6. How much to induce them to put in cooling plants, since 1896. 7. How much to induce them to put in cold storage plants, since 1896. 8. Tracings of temperatures, as recorded by thermographs placed on ocean steamers by officers of the government, (*a*) in cold storage chambers; (*b*) in cooled chambers; (*c*) in ventilated chambers, if any; (*d*) in other parts of steamers, if any, naming location. Presented 9th June, 1903. *Mr. Smith (Wentworth)*.....*Not printed.*

102*a*. Return to an address of the Senate, dated 26th and 28th August, 1903, for papers relating to the ventilation of space in steamships used for storage during transportation of perishable products, such as apples and cheese—in so far as the department of agriculture is concerned. Presented (Senate) 24th September, 1903.—*Hon. Mr. Ferguson*.....*Not printed.*

103. Return to an address of the House of Commons, dated 30th March, 1903, for copies of tenders asked for and received for Quebec harbour improvements, during the last ten months; of reports to council, correspondence, and plans prepared by the department of public works, in reference to such works. Presented 11th June, 1903.—*Mr. Tarte*.....*Not printed.*

104. Return to an address of the House of Commons, dated 30th March, 1903, for copies of all orders in council, and of all other documents and correspondence relating to the appointment of a commission instructed to secure a site for a dry dock in the port of Montreal; likewise of the instructions given regarding that subject, the reports that may have been made, etc. Presented 11th June, 1903.—*Mr. Tarte*.....*Not printed.*

105. Return to an order of the House of Commons, dated 26th March, 1903, showing the number of buildings, or portions of buildings, rented or occupied by the government for offices or other purposes, in Ottawa, outside the departmental buildings; from whom rented, terms of lease or leases, and rent being paid for each. Presented 11th June, 1903.—*Mr. Sproule*.....*Not printed.*

106. Return to an order of the House of Commons, dated 15th April, 1903, for copies of all engineers' reports, plans, specifications, estimates and correspondence in reference to surveys made on French River and Lake Nipissing. Also copies of all reports and surveys recently made on the Ottawa and Culbute Rivers. Presented 11th June, 1903.—*Mr. Murray*.....*Not printed.*

107. Return to an order of the House of Commons, dated 23rd March, 1903, for copies of all correspondence, letters, documents, specifications, plans concerning the deepening of the River Jésus, from the end of the isle to the end of the Pacific Bridge, on the said river, so as to allow the passage of vessels drawing five feet of water. Presented 11th June, 1903.—*Mr. Desjardins*.....*Not printed.*

108. Return to an address of the House of Commons, dated 30th March, 1903, for a copy of the contract made with Poupore & Malone, for the construction of a wharf at the foot of St. Mary's Current, in the port of Montreal; and of any agreements modifying the original terms of said contract. Presented 11th June, 1903.—*Mr. Monk*.....*Not printed.*

109. Return to an address of the Senate, dated 27th May, 1903, for a copy of all the correspondence exchanged between the militia department, or the government of Canada, and the government of the province of Quebec, and the council of the city of Quebec, on the subject of the improvements to be made in the military riding school at Quebec, and its projected enlargement. Presented (Senate) 9th June, 1903.—*Hon. Mr. Landry*.....*Not printed.*

110. Return to an order of the House of Commons, dated 4th May, 1903, for a list of all permanent and temporary officials of the several branches of the department of the interior; date of appointment, and their salaries, on the first day of July, 1902. Also a list of the permanent and temporary officials of the Indian branch of that department, on the first day of July, 1896. And also on the same date in 1902 with same particulars as to date of appointment and salaries. Presented 12th June, 1903. *Mr. LaRivière*.....*Not printed.*

CONTENTS OF VOLUME 13—*Continued.*

111. Return to an address, dated 1st June, 1903, for a statement showing, year by year, the quantity and value of pulp wood exported from the port of Three Rivers, from 1896 up to date ; such statement to show the name of each exporter, as well as the quantity and value of the wood exported by each one, also year by year ; and in the case of exporters not having declared the quantities to the customs officer, the statement to show the value by the cord upon which the total value has been based, as declared by the exporters. Presented (Senate) 15th June, 1903.—*Hon. Mr. Landry.... Not printed.*

112. Return to an address, dated 1st May, 1903, for a copy of all documents whatsoever relating to the commutation of the sentence of death pronounced against Joseph A. Mathurin, including therein the report of the judge who presided at the trial, the permission of the judge for the production of such report having been previously obtained. Presented (Senate) 15th June, 1903.—*Hon. Mr. Landry. Not printed.*

113. Return to an order of the House of Commons, dated 19th June, 1903, for copies of certain estimates in connection with the Canadian Northern Railway, as follows : 1. Approximate estimate of cost of line from Grandview to Edmonton—62 miles. 2. Approximate estimate of cost of construction from 100 miles east of Prince Albert to Prince Albert. Presented 19th June, 1903.—*Hon. A. G. Blair. Printed for both distribution and sessional papers.*

114. Return to an order of the House of Commons, dated 23rd June, 1903, for a copy of the report of the commissioners appointed to make an investigation into the accident which happened at West Lorne Station of the Lake Erie and Detroit River Railway on April 29th last. Presented 23rd June, 1903.—*Hon. A. G. Blair.... Not printed.*

115. Return to an order of the House of Commons, dated 24th June, 1903, for a statement showing : 1. The number of men employed by the customs department at each port in the Dominion on the 1st day of May, 1900. 2. The number of said men who were transferred to the statistical staff at Ottawa between the 1st May and 1st September, 1900. 3. The number of men in the employ of the customs department at each of the ports of the Dominion on the 1st day of May, 1903. Presented 24th June, 1903.—*Mr. Taylor. ... Not printed.*

116. Return to an address of the House of Commons, dated 11th May, 1903, for copies of all orders in council, memorials, letters, telegrams, and other correspondence, and all other documents and communications in writing, between the 1st day of January, 1897, and the 1st day of May, 1903, relating to, or concerning, or in any way having reference to the granting of provincial autonomy to the North-west Territories ; or the creation of the said territories into a province, or provinces. Presented 26th June, 1903.—*Mr. Borden (Halifax).... Printed for both distribution and sessional papers.*

116*a*. Supplementary return to No. 116. Presented 24th July, 1903. *Printed for both distribution and sessional papers.*

116*b*. Further supplementary return to No. 116. Presented 13th October, 1903. *Printed for both distribution and sessional papers.*

117. Return to an order of the House of Commons, dated 30th March, 1903, of all sales of school lands in Manitoba and the North-west Territories since 1896, showing : 1. Date of sale. 2. Place where the sale occurred. 3. Name of auctioneer. 4. Total amount of purchase money. 5. Total amount paid at time of sale. 6. Total amount paid since time of sale. 7. Total amount still due for principal and interest, respectively. 8. Total amount of sale by each auctioneer. 9. Total amount paid to each auctioneer for his services. Presented 29th June, 1903.—*Mr. Roche (Marquette).. Not printed.*

118. Return to an order of the House of Commons, dated 11th May, 1903, for copies of petitions, engineers' reports, estimates and correspondence, in reference to the building of a pier at or near Carlton Point, Prince county, Prince Edward Island, in connection with promoting the efficiency of winter communication between Prince Edward Island and the mainland. Presented 2nd July, 1903. —*Mr. Lefurgey. ... Not printed.*

119. Return to an order of the House of Commons, dated 11th May, 1903, for copies of all reports, correspondence, petitions and papers, filed in the department of public works, or other department, in the matter of the lowering or regulating of the water of Lakes Simcoe and Couchiching ; and the relieving of lands in the townships of Mara, Rama and Morrison, from floods occasioned by the overflow of said lakes. Presented 2nd July, 1903.—*Mr. Grant. ... Not printed.*

120. Return to an order of the House of Commons, dated 30th March, 1903, for copies of all papers, letters, telegrams, contracts, specifications, and correspondence of every description whatever, between the minister of public works, or any other member of the government, and the contractors,

CONTENTS OF VOLUME 13—*Continued.*

sub-contractors, and other parties, in connection with the repairs to the post office, and the building of a new retaining wall, in connection with the post office, in the town of Woodstock, N.B. Presented 2nd July, 1903.—*Mr. Ingram* ..... *Not printed.*

121. Return to an order of the House of Commons, dated 8th April, 1903, for a statement showing amount expended each year since the 30th June, 1890, on public works of all kinds in Toronto, including Toronto harbour; showing the nature of each class of work in respect of which such expenditure has been made. Presented 2nd July, 1903.—*Mr. Grant* ..... *Not printed.*

122. Return to an order of the House of Commons, dated 18th May, 1903, for a copy of the receipt given for price of acquisition of site of new post office at L'Assomption; copies of all cheques issued in payment of any sums expended in connection with the purchase of site of said new post office, or expenses connected therewith. Presented 2nd July, 1903.—*Mr. Monk*..... *Not printed.*

122*a*. Return to an address of the House of Commons, dated 18th May, 1903, for copies of all letters addressed to the government by Rudolph Arbour, Phineas Viger, Vital Racette, Joseph Ed. Duhamel, Charlemagne Laurier, M.P., and all answers thereto, in respect to a new post office for the town of L'Assomption, in regard to the contract for the acquisition of a post office site. Also a copy of the contract of sale; copies of tenders for building said post office, and of all reports sent in by the architect, in reference to said site and new building. Presented 2nd July, 1903.—*Mr. Monk.* *Not printed.*

123. Return to an order of the House of Commons, dated 28th April, 1902, showing the amount of money spent on the St. Lawrence River from Montreal to Quebec, with the object of making Montreal a national port. Presented 2nd July, 1903.—*Mr. Davis*..... *Not printed.*

124. Copy of the contract for steamer service between the dominion of Canada and South Africa. Presented 7th July, 1903, by Sir Richard Cartwright. ..... *Not printed.*

125. Return to an address of the House of Commons, dated 11th May, 1903, for copies of all correspondence, orders in council, and other documents, in anywise relating to improvements or work done by the government of the United States: 1st. In the Detroit River and Lake Erie. 2nd. In other international waters. Presented 10th July, 1903.—*Mr. Cowan*.. ..... *Not printed.*

126. Return to an address of the House of Commons, dated 4th May, 1903, for copies of all correspondence between the city of Vancouver and other persons, and the government of the Dominion, or any member thereof, relating to grant or lease of False Creek. Presented 13th July, 1903.—*Mr. Earle*..... *Not printed.*

127. Return to an order of the House of Commons, dated 1st June, 1903, for copies of all papers and documents connected with the enumeration of the parish of Kars, King's County, N.B., in the Census of 1901; including copies of all correspondence between the Rev. Joseph McLeod, D.D., and Census Commissioner Blue, in relation thereto. Presented 13th July, 1903.—*Mr. Lancaster.* *Not printed.*

128. Return to an address of the House of Commons, dated 11th May, 1903, for copies of all orders in council, and all correspondence in connection therewith, respecting the purchase in Canada, by or through the government of Canada, or any department, or officer thereof, of any horses, hay, oats, material, supplies, animals, or merchandise, for the Imperial government, or any department, or officer thereof, during the years 1900, 1901 and 1902. Presented 15th July, 1903.—*Mr. Borden (Halifax)* ..... *Not printed.*

129. Return to an address of the Senate, dated 1st of June, 1903, for a statement showing, year by year, the quantities of each kind of wood entered at the port of Ottawa for exportation, since 1892 up to date. A similar statement for the port of Montreal. A similar statement for the port of Three Rivers. A similar statement for the port of Quebec. Presented (Senate) 15th July, 1903.—*Hon. Mr. Landry*..... *Not printed.*

130. Return to an address of the Senate, dated 1st of June, 1903, for a statement showing, year by year, from 1896 up to date, the number of saw-logs and of other pieces of wood which have passed through the St. Maurice slides, distinguishing the number of pieces stopped respectively at Grandes Piles, Grand'Mère, and at the Shawenegan Falls (to be used at each of these localities or forwarded from each of these localities), from the number of pieces taken down as far as Three Rivers. Presented (Senate) 15th July, 1903.—*Hon. Mr. Landry*..... *Not printed.*

131. Return to an order of the House of Commons, dated 22nd July, 1903, for a copy of the Report of the British Columbia Salmon Commission. Presented 22nd July, 1903.—*Hon. J. R. Prefontaine.* *Not printed.*

CONTENTS OF VOLUME 13—*Continued.*

132. Return to an order of the House of Commons, dated 24th July, 1903, covering map showing: 1. Odd sections finally reserved for the Qu'Appelle, Long Lake and Saskatchewan Railway and Steamboat Company for selection of its land grant. 2. Original tract reserved for same purpose, and also map showing: 3. Area available throughout the whole North-west Territories out of which the company was authorized to select its land grant, as per letter of 25th January, 1900, of the minister of the interior, with copy of such letter. Presented 24th July, 1903.—*Mr. Sifton*.....*Not printed.*

132*a*. Partial return to an address of the House of Commons, dated 4th May, 1903, for copies of all papers, orders in council, letters and correspondence, between the government, or any member thereof, in reference to land granted to the Qu'Appelle, Long Lake and Saskatchewan Railway Company; and also all letters, papers, correspondence, and orders in council, if any, with the Saskatchewan Land Company, in reference to their acquisition of the land granted to said Qu'Appelle, Long Lake and Saskatchewan Railway Company. And also as to their acquisition of the even-numbered sections within the territory granted to said railway company. Presented 24th July, 1903.—*Mr. LaRivière*.....*Not printed.*

132*b*. Supplementary return to 132*a*. Presented 21st August, 1903.....*Not printed.*

133. Return to an order of the House of Commons, dated 24th July, showing copies of papers of record in the department of the interior, with regard to the claims of Mr. Amos Barnes, for damages with respect to land occupied by him at East Selkirk, Manitoba. Presented 24th July, 1903.—*Mr. Sifton*.....*Not printed.*

134. Return to an address of the House of Commons, dated 1st June, 1903, for copies of all communications addressed to the government, or to any minister, in relation to the grant of fishing rights in James Bay, or Hudson's Bay, to Archibald McNee, of Windsor, Ontario. Copies of all answers thereto, and any communications relating to the transfer of said lease. Presented 24th July, 1903.—*Mr. Lancaster*.....*Not printed.*

135. Return to an order of the House of Commons, dated 11th May, 1903, for copies of all reports, correspondence, petitions and papers that are to be found in the department of marine and fisheries, or in any other department, concerning the construction and placing of fish-ladders in the Rivière du Nord, crossing the county of Two Mountains, from its confluence with the Ottawa River, at St. André, in the county of Argenteuil, to St. Jerome, in the county of Terrebonne, for the purpose of preventing the destruction of fish in the Rivière du Nord. Presented 24th July, 1903.—*Mr. Ethier.* *Not printed.*

136. Return to an order of the House of Commons, dated 1st June, 1903, for a copy of all returns from the local clerks of court, or other officers of the government, in the North-west Territories, showing number, names, occupations, residence, etc., of all persons naturalized in the North-west Territories during the past ten years, or any portion thereof; as well as all other information contained in such returns. Presented 31st July, 1903.—*Mr. Borden (Halifax)*.....*Not printed.*

137. Return to an address of the Senate, dated 15th July, 1903, showing the amount of customs and excise duties collected at the several ports of entry in the North-west Territories for the year ending the 30th June last. Presented (Senate) 31st July, 1903.—*Hon. Mr. Perley*.....*Not printed.*

138. Return to an order of the House of Commons, dated 4th August, 1903, for a copy of a Memorandum on the Status of the Question of Fishery Rights between the Federal and Provincial Governments. Presented 4th August, 1903.—*Hon. J. R. Préfontaine*.....*Not printed.*

139. Return to an order of the House of Commons, dated 5th August, 1903, containing the following maps: 1. Short Line Survey, Rivière Ouelle and Edmunston. 2. Short Line Railway, from height of land to Long Lake. Presented 5th August, 1903.—*Sir Wilfrid Laurier*.....*Not printed.*

140. Return to an order of the House of Commons, dated 1st June, 1903, giving: 1. The total number of Intercolonial freight cars in use on connecting lines on the first day of March, 1902, and the first day of March, 1903, respectively, or the nearest dates to these that the car mileage reports are prepared; the list of roads using these cars at the dates named, and the number in use on each road; and the number of days such cars have been in use on such roads. 2. The number of cars belonging to connecting lines in use on the Intercolonial on the first of March, 1902, and the first of March, 1903; the names of the roads owning or controlling these cars, and the number of days such cars have been in use on the Intercolonial on these dates. Presented 5th August, 1903.—*Mr. Haggart*.....*Not printed.*

141. Return to an order of the House of Commons, dated 1st June, 1903, giving: 1. The number of ties that have been issued in the sidings and on the main lines of the Intercolonial Railway, and charged to the capital account, for the years 1900-01 and 1901-02, and to the first of April, 1903. 2. Also as to the number of ties purchased between the 30th June, 1902, and the first of April, 1903.

CONTENTS OF VOLUME 13—*Concluded.*

The list of names from whom purchased, and the quality and prices paid. 3. The number of ties that have been actually used in the track, between the 30th of June, 1902, and the first of April, 1903, and charged to ordinary maintenance. Presented 5th August, 1903.—*Mr. Haggart.*
Not printed

142. Return to an address of the House of Commons, dated 25th August, 1903, for copies of cablegrams that passed between the Honourable the Secretary of State for the Colonies and His Excellency, relative to the publication of the proceedings of the Colonial Conference. Presented 25th August, 1903.—*Sir Wilfrid Laurier*..... *Not printed.*

143. Return to an order of the House of Commons, dated 15th September, 1903, for copies of the report on the resources of the country between Quebec and Winnipeg along the line of the National Transcontinental Railway. Presented 15th September, 1903.—*Sir Wilfrid Laurier.*
Printed for both distribution and sessional papers.

144. Return to an address of the House of Commons, dated 18th May, 1903, for copies of the correspondence exchanged between the Dominion government and that of the province of Quebec regarding the following claims produced by the latter: 1. $1,425,855, being the share of the province of Quebec in the indemnity paid by the United States government as a compensation for the advantages accorded to American fishermen. 2. $490,000, indemnity due to the province of Quebec for leases and licenses granted by the federal government to fish in the interior and salt waters within the limits of the said province. Presented 11th September, 1903.—*Mr. Lemieux.*
Not printed.

145. Return of the regulations made by the governor in council under the authority of section 47 of the Dominion Lands Act, applicable or relating to the Yukon territory. Presented 10th October, 1903, by Sir Wilfrid Laurier.. ..... *Not printed.*

146. Copy of correspondence respecting the arrangements entered into between the department of the interior and the North Atlantic Trading Company, for the promotion of emigration to Canada from the continent of Europe. Presented 16th October, 1903, by Hon. J. Sutherland... *Not printed.*

147. Return to an address of the Senate, dated 7th October, 1903, for a copy of the returns to the finance department for the years 1896 and 1897 of the Mutual Reserve Fund Life Association. Presented (Senate) 16th October, 1903.—*Hon. Mr. Domville*..... *Not printed.*

147*a*. Return to an address of the Senate, dated 2nd October, 1903, for a statement of the affairs of the Mutual Reserve Life Insurance Company of New York, as last sent to the insurance department. Presented (Senate) 16th October, 1903.—*Hon. Mr. Domville* .... *Not printed.*

148. Papers in connection with the Quebec bridge. Presented 20th October, 1903, by Hon. W. S. Fielding .... *Printed for both distribution and sessional papers.*

149. Correspondence and papers in relation to the Alaska boundary question. Presented 22nd October, 1903, by Sir Wilfrid Laurier... ..... *Printed for both distribution and sessional papers.*

150. Report of the commissioners appointed to examine the cattle guards in use on the principal lines of railway in Canada and the United States, and also of such inventions of this nature as were presented. Presented 22nd October, 1903, by Hon. W. S. Fielding..... ... . *Not printed.*

151. Return to an address of the Senate, dated 15th June, 1903, for copies of all orders in council, correspondence, reports and recommendations of the warehouse commissioner, and other documents in anywise relating to the Grain Act, since January, 1901. Presented (Senate) 31st August, 1903. —*Hon. Mr. Young*.. .... *Not printed.*

152. Memorandum of settlement terms of the agreement made between the government of Canada and the Government of Manitoba for the settlement of the school question. Presented (Senate) 3rd September, 1903, by Hon. R. W. Scott..... ..... *Not printed.*

153. Return to an address of the Senate, dated 3rd September, 1903, for a copy of the agreement referred to by the Honourable Mr. Roblin, in his interview with the gentlemen who composed the cathoic deputation, as having been entered into and signed by Sir Wilfrid Laurier, representing the Dominion Government, on one side, and Honourable Mr. Clifford Sifton, representing the province of Manitoba, on the other side, together with a copy of the "reply given in writing to the memorial of the delegates, by the premier, Sir Wilfrid Laurier, and the minister of justice, the Honourable Mr. Fitzpatrick," and that, if no written reply was given by the premier, the senate be informed of the character of the demands made by said deputation, and of the answer given by, or of the action taken thereon, by the premier and the minister of justice. Presented (Senate) 24th September, 1903.—*Hon. Mr. Bernier* ..... *Not printed.*

SUMMARY REPORT

OF THE

GEOLOGICAL SURVEY DEPARTMENT

OF

CANADA

FOR THE CALENDAR YEAR

1902

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1903

[No. 26—1903.]

No. 816.

To His Excellency the Right Honourable the Earl of Minto, Governor-General of Canada, &c., &c., &c.

May it Please Your Excellency:

The undersigned has the honour to lay before Your Excellency, in compliance with 3 Vic., Chap 2, Section 6, the Summary Report of the Proceedings of the Geological Survey Department for the calendar year ending December 31, 1902.

Respectfully submitted,

CLIFFORD SIFTON,
Minister of the Interior.

January, 1903.

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Geological Survey of Canada

ROBERT BELL M.D Sc.D. (Edinburgh) LL.D F.R.S. ACTING DIRECTOR

1903

C. O. Senecal B.A.Sc. Geographer and Chief Draughtsman.

To accompany Part A, Annual Report, Vol. XV

No. 810

Map of the

DOMINION OF CANADA

Shewing Progress of Field Operations by the

GEOLOGICAL SURVEY

1843 1903

To illustrate Summary Report of

Dr. ROBERT BELL, Acting Director.

Scale of statute miles

100 50 25 0 100 200 300 400 500 600

SUMMARY REPORT

ON THE OPERATIONS OF

THE GEOLOGICAL SURVEY OF CANADA

FOR THE CALENDAR YEAR 1902.

The Honourable Clifford Sifton, M.P.,
Minister of the Interior.

Sir,—In conformity with the Geological Survey Act, 53 Victoria, chapter 11, 1890, I have the honour to submit the following Summary Report of the operations of this department during the calendar year 1902. It contains a statement of the work carried on in all branches of the department, both in the office and museum and in the field. It will be seen that a large amount of original research has been accomplished and that the results of much labour and expenditure of previous years have been made available for the use of the public.

Work devoted to development of mineral resources.

With the exception of the natural history work of the Survey, including palæontology and botany, the whole force of the department has been devoted during the past year to economic geology, with a view to promoting the development of the mineral resources of the Dominion. This applies to the chemical, mineralogical, petrological, topographical, cartological, statistical and educational work, as well as to the field operations.

Prevailing misunderstanding of scope of the Survey.

An erroneous impression prevails among many persons who have never had occasion to inform themselves, as to the nature of the work performed by this department. They imagine that the geologists devote themselves largely to 'theoretical and purely scientific' geology, instead of giving their attention, as they do, entirely to practical work, looking to the development of our various mineral resources.

System followed.

The Geological Survey of Canada was first provided for and organized in 1842, and field-work was begun in 1843, so that we are now in the 61st year of our existence. Our present organization and the system of work followed by the department have been evolved out of an actual experience of sixty years and in addition to this experience, the officers of the Survey have had a full knowledge of the methods

practised by similar Surveys in other countries and have always been ready to consider any suggestion or new departure which might be of advantage in this country. Its present efficient condition is therefore due to the efforts and thoughtful consideration of a very large number of officers of proved ability and devotion, who have successfully laboured and passed away during this long period, as well as to the present staff. Every year the Survey is the object of numerous encomiums from practical scientists, both at home and abroad, who observe and appreciate its work.

Efficiency of the Survey recognized abroad

Among the notices of the operations of the Survey during the last year, the Bulletin of the Geographical Society of Paris for October, 1902, pp. 263-266, in an editorial article on the work of the Geological Survey of Canada in 1901, says: 'During the field season of 1901, not less than thirty-one geological parties organized by the Geological Survey of Canada, were sent out to cover various parts and districts of the Dominion. The operations are always conducted in a practical manner, their object being, not only the scientific study of the fields covered, but also to determine their mineral possibilities from an economic standpoint, and to fix the extent of the formations which may present some interest in this respect. When the operations are conducted over areas which have not previously been delineated, the geological party undertakes concurrently the topography and the mapping of the territory covered.'

Value of maps and reports.

'This work of mapping the geological and topographical features is of great practical utility, inasmuch as it brings out and makes known the great resources of Canada. Such maps and reports are a source of accurate information as to the value of the land, and the probable mineral wealth of the areas explored, affording great help thereby to both the agricultural and mining communities. At a meeting of the British Association for the Advancement of Science, recently held at Belfast, the President, Col. Sir Thomas Holdich, called special attention to the services rendered to colonization by the work of the Geological Survey of Canada. Had such an organization been at work in South Africa, the services which it might have rendered can hardly be over-estimated, and as the eminent British topographer remarks, the results which could have been obtained by such a staff in that territory would have saved many costly experiments and much tentative work. We may add that a systematic method of exploration of our colonies (those of France) conducted on the lines of the Geological Survey of Canada, would have greatly hastened their development and spared many disappointments.

To colonization.

Clearness of maps.

'The maps published by the Geological Survey of Canada are remarkable for their clearness and neatness of execution, and may well

be quoted as models to be followed. For these splendid results, the Director of the Survey, Dr. Robert Bell, deserves great credit and praise. We may mention incidentally that the total annual expenses of the Survey, including administration, exploring expenses and publishing of maps amount to 579,000 francs. Services of the Director. Cost.

'The Summary Report of the Geological Survey of Canada for 1901 gives a resumé of the operations of the thirty-one parties sent out during the year.

'In 1901 the Geological Survey published thirty-eight new maps and four profiles. There is moreover the announcement of the very early publication of a general geological map of the Dominion on a scale of about fifty miles to an inch, extending to north and east as far as Hudson strait and to the west as far as Great Bear lake.' Large issue of new maps.

The western half of this map was issued in 1902. The topography of the eastern half is already engraved and the delineation of the geology is in progress.

TOPOGRAPHY.

Canada is indebted mainly to the Geological Survey for its present knowledge of the topography of the Dominion. Few persons have any idea of the vast amount of good topographical work which has been performed, at a comparatively small cost, by the officers of the Department during the sixty years of its existence. Although this has been only incidental to the geological work, the topographical service alone which has been rendered is worth more to the country than the whole cost of the Survey from the beginning. Topographical surveys made.

Following the original discoverers of the main geographical features of Canada, the officers of the Geological Survey have been the pioneers in the more accurate topographical exploration and survey of the country all the way from the southern parts, northward to the sub-Arctic regions. The accompanying map shows, on a small scale, the areas which have been more or less completely surveyed and mapped and also the routes which have been explored and surveyed in the more northern regions. These reconnaissance surveys extend through all parts of the country to a distance of about a thousand miles northward from the International boundary. Vast extent of country surveyed.

Previous to the confederation of the first four provinces to form the original Dominion of Canada in 1867 and the subsequent acquisition by the Dominion of the other British possessions in North America, including British Columbia, the territories of the Hudson's Bay Company, the Labrador peninsula and all the islands lying northward of the mainland of North America, the operations of the Geological

Survey were confined to those southern portions which constitute the provinces now called Ontario and Quebec. But since confederation, in addition to the maritime provinces and British Columbia, the attention of the department has been directed to surveying topographically and geologically the vast newly acquired territories above referred to, including those portions of them which have been added to Ontario and Quebec. These great regions were entirely unsurveyed and but partially explored, only the main geographical features being roughly indicated on the sketch-maps. The subdividing of the fertile lands of Manitoba and the North-west Territories for the purpose of settlement was performed by a different department, but the running of the artificial lines required, added comparatively little topography to the map of Canada.

Dominion Lands surveys.

The field-men of the Geological Survey have been the first surveyors of the natural or geographical features of the immense regions referred to which constitute nearly one-half of the continent. In order to map out the rock-formations, the geologists found it necessary to make simultaneously both topographical and geological surveys. From their long experience in these operations they have been able to do this work rapidly and well. Thus an astonishing amount of accurate geographical surveying has been accomplished by a small number of devoted men with very limited means at their disposal.

CHEMICAL AND MINERALOGICAL WORK.

Dr. Hoffmann's work.

As shown by Dr. Hoffmann's report, herewith, this has been of the usual character during the year just closed, and has consisted largely of the examination of specimens of economic minerals which have been sent to the laboratory by miners, prospectors, explorers and landowners in all parts of the Dominion. In each case a written report has been furnished to the inquirer. Systematic chemical examinations have also been made in regard to economic minerals of importance.

Materials most frequently inquired for.

The materials about which inquiry has been most frequently made by letter or by persons calling at the department during the year have been principally the following: asbestus, barytes, bauxite, chromic iron, celestite, cement stone, clays and marls for the manufacture of cement, coal, copper ores, feldspar, fire-clay, graphite, gypsum, iron pyrites, iron ores and iron sands, infusorial earth, kaolin, molybdenite, magnesite, petroleum, platinum, peat, soapstone and zinc ores. Of these again the following were the most frequently inquired for: materials for the manufacture of hydraulic cement, molybdenite, petroleum, iron ores, kaolin and peat.

Peat.

The higher price and threatened scarcity of fuel in the greater part of Canada during the year stimulated popular interest in the peat

resources of the country. The field officers of the department have gathered much valuable information as to the location, extent, depth and quality of peat bogs in the different provinces and the northern districts, and also as to the nature of the various attempts which have been made at different times to manufacture peat fuel.

ROOFING SLATE.

Excellent quality of Canadian slate.

The roofing slates of the Melbourne region in the Eastern Townships do not appear to be excelled in quality by those of any other country in the world. If their merits were better known, both at home and abroad, it is probable that the demand for our slates would be much increased. The following letter from a dealer in slate addressed to Mr. Harrison Watson, Canadian representative at the Imperial Institute, London, contains interesting information on this subject :—

LONDON, November 14, 1902.

H. WATSON, Esq.,
Imperial Institute.

DEAR SIR,—Confirming our interview with you, we shall be glad if you will follow up the question of developing the Canadian slate trade.

Demand active.

The present time is very favourable, as the American trade has really stopped, on account of all the slates being required for local demand in America. In consequence of the scarcity of American and Welsh slates, buyers here have gone to France for their requirements. The French slate is not equal to the American in quality, but it is considerably cheaper. The quality of the American is between best French and Welsh and the prices are the same in proportion. The Canadian sample which we inspected at the Institute is a very good slate, and in our opinion equal if not better than the American. The sizes suitable for this market are 24-in. x 12-in., 22-in. x 12-in., 22-in. x 11-in., 20-in. x 12 in., 20-in. x 10-in., 18-in. x 12-in., 18-in. x 10-in., 18-in. x 9-in., 16-in. x 12-in., 16-in. x 10-in., 16-in. x 9-in. and 16-in. x 8-in. The slates you showed us are a little too thick, they should measure 18-in. to 19-in. per 100 slates piled up on the plate.

Cost of production.

Quarrying in America is carried on at a cost of $1.75 to $2 per square of 100 feet super, and the selling price is from $2.40 to $3 per square at quarry.

The slates have to travel, according to the different quarries, from 70 to 200 miles to shipping port. The freight to London from Philadelphia is 13 shillings and five per cent, and the London dock charges are 2s. 6d. per ton if taken by barge from ship. A square of slates weight about 575 lbs. On the above calculations the selling prices

here are about 12½ to 15 per cent under Welsh prices. The American slate trade with the United Kingdom in 1896 was about 46 million slates, but dropped to half the amount last year, and this year will be considerably less.

Rockland slates.

Slates of the quality of the Rockland slate will always sell, and if prices suit we are open to make contracts for a large quantity. In our opinion the Canadian slate cleaves well and there is very little waste. The Welsh quarries produce from 100 tons rock only 10 to 20 tons clear slates: even Lord Penrhyn's quarry, which is considered the best, only produces 25 tons clear slate and 80 tons rubbish.

Proportion of slate to waste.

The American quarries produce from 100 tons rock about 60 tons good slates and 40 tons waste, which is mostly worked up again into electrical appliances, etc., and we believe you will find the same proportions in Canada. Slate rock is found a few feet from the top, but the deeper one goes the better the slate. An opening can be made to pay at a depth of 30 to 40 feet. There is not much machinery required to open a quarry, and the rock is so abundant in America that the waste caused by breaking the blocks to the required sizes by hand does not matter.

We can deal in slates to the following ports, to most of which there are special steamers running from Montreal: Belfast, Cork, Dublin, Glasgow, Liverpool, Bristol and London.

We shall be glad to give you any further information you may require.

Yours truly,

(Signed) A. HITT,
American Slate Company.

Mineral collections at exhibitions.

The collection of the economic minerals of Canada belonging to the Survey, which had been exhibited in Paris in 1900 and in Glasgow in 1901, was divided into two parts and exhibited during the past summer at the exhibitions held at Wolverhampton and Cork. Pamphlets, giving short descriptions of the mineral resources of Canada, were prepared by the Geological corps and distributed at all the above mentioned exhibitions.

Minerals distributed to schools.

There is an increased demand from the higher educational institutions all over the Dominion for named collections of Canadian minerals and rocks. As shown in Dr. Hoffmann's report, such collections have been supplied as far as possible, subject to certain conditions. I have no doubt these collections have been the means of creating among students and scholars a widespread interest in geology and mineralogy which would not otherwise have existed. The knowledge thus acquired

by so large a number of young men will no doubt have an important effect in leading to the discovery and working of useful minerals in the future.

MINES SECTION.

The report of this section of the department for 1901, was published during the year and amongst other things it gives a large amount of comparative statistics of the mineral production of the country. The complete returns for 1902 are not yet received, but there are indications that there will be a considerable falling off in the output of gold and probably a slight decrease in the total of our mineral products as compared with 1901.

Mr. Ingall's work.

Mr. Ingall, who is in charge of this section, spent the greater part of the summer in making a detailed geological survey of an area measuring about 20 miles square behind the Bruce Mines. He was assisted in this work by Mr. T. Denis, formerly of the same section, and three students.

PALÆONTOLOGY.

Dr. Whiteaves' work.

Dr. Whiteaves has completed Part V., vol. I, of his Mesozoic Fossils and it is now in type (106 pp.) The figures for ten of the twelve plates which are to accompany it have been drawn by Mr. Lawrence M. Lambe, and these will be lithographed in Canada, while the remaining two plates have been already lithographed and printed in England. A quarto memoir, forming Part 2, volume III of the 'Contributions to Canadian Palæontology' was published during the summer. It is 'on the Vertebrata of the Mid-Cretaceous of the North-west Territory' by Professor Henry Fairfield Osborn and Mr. Lawrence M. Lambe and contains 81 pages of text with numerous figures and 21 fine photogravure plates. A description, with figures, of a new species of Osmundites from the Queen Charlotte Islands, prepared for the Survey by Professor Penhallow, of McGill University and illustrated by several figures, is published in the Proceedings of the Royal Society of Canada for the present yeor. Part 2, volume II, of Professor Samuel H. Scudder's 'Canadian Fossil Insects' was published by the department during the previous year. Dr. Ami's palæontological work has consisted largely of the determination of collections of fossils for the purpose of identifying geological horizons.

Mr. Lambe's reports.

Dr. Ami's determinatio of fossils.

BOTANY AND ZOOLOGY.

Professor Macoun's report on the Klondike.

During the summer, Professor John Macoun visited the Yukon valley and stayed for some weeks at Dawson for the purpose of studying the climate, the indigenous flora and the agricultural possibilities

of the Klondike district. The results, as set forth in his report, proved to be of much interest and economic importance. Part VII, being the concluding volume of Professor Macoun's catalogue of Canadian plants, was published during the year. It is on the Lichens and Hepaticaæ, and contains 318 pages. Part II of the catalogue of Canadian birds by the same author is well advanced and will be issued in 1903. Part III will complete the series. Mr. James M. Macoun, assistant botanist and naturalist, did a successful season's work with the International Boundary Commission in southern British Columbia, and among other results brought home large and interesting collections of plants, birds and mammals. Mr. Lawrence W. Watson, who in 1901, collected plants and studied the flora of Prince Edward Island for the Survey, has completed his list of the plants of that province and it is intended to publish it as soon as possible.

On lichens, birds, etc.

Mr. J. M. Macoun.

Mr. Watson's flora of P.E.I.

FLORA OF HUDSON BAY.

A memoir on the flora of Hudson bay, based on the plants collected around that sea at various times and places by the officers of the Survey, has been prepared by Professor John Macoun, Mr. J. M. Macoun and Dr. Theodore Holm of Washington. These collections were found to contain ten new species of flowering plants, which have been described jointly by the three botanists just named. Dr. Holm has made drawings of each species to illustrate the descriptions and these will be reproduced in the form of ten plates to accompany the memoir. The work will be issued as one of the special publications of the Survey.

Flora of Hudson bay.

Theodore Holm's drawings.

MAPS.

The preparation and engraving of maps, resulting from the field-work of the officers of the Survey, has been pushed forward with great energy under the direction of Mr. C. O. Senécal, the geographer and chief draftsman of the department. This officer's report contains full particulars of the work accomplished and a statement of the maps published during the year.

Work of Mr. C. O. Senécal.

OTHER PUBLICATIONS.

The following reports and special works have also been published by the Survey in 1902:—

List of publications in 1902.

Summary Report of the Geological Survey for the calendar year 1901, pp. 269, with 3 sections, 4 plates and 10 maps.

Part A, vol. XIV., with 10 maps, plates, and sections, by the geological corps.

SESSIONAL PAPER No. 26

Report on the surface geology shown on the Fredericton and Andover quarter-sheet maps, New Brunswick, Part M, vol. XII., pp. 41, by Dr. Robert Chalmers.

Notes on certain Archæan Rocks of the Ottawa Valley, Part O, vol. XII., pp. 84, by Prof. Osann.

Report on an Exploration of the east coast of Hudson Bay, Part D, vol. XIII., pp. 84, with maps, by Mr. A. P. Low.

Report on Explorations in the north-eastern portion of the District of Saskatchewan, &c. Part F, vol. XIII., pp. 48, by J. B. Tyrrell.

Report on Geological Explorations in Athabasca, Saskatchewan and Keewatin Districts, &c. Part FF, vol. XIII., pp. 44, by Mr. D. B. Dowling. The Grass River map-sheet accompanies Reports F and FF.

Report on the Nottaway River basin. Part K, vol. XIII., pp. 11, with a geological map, by Dr. Robert Bell.

Report on the Geology and Petrography of Shefford Mountain, Quebec, by Principal J. A. Dresser. Part L, vol. XIII., pp. 35.

Report upon the Carboniferous System of New Brunswick, &c. Part M, vol. XIII., pp. 38, by Professor L. W. Bailey.

Report upon the Carboniferous System of New Brunswick, &c. Part MM, vol. XIII., pp. 38, by H. S. Poole, Esq.

Section of Mines Annual Report for 1900. Part S, vol. XIII., pp. 160, by Mr. E. D. Ingall and Mr. McLeish.

Annual Report, vol. XII. (new series), 1899, English edition, pp. 972, with 8 maps.

Annual Report, vol. XI. (new series), French edition, pp. 934.

Catalogue of Canadian Plants, Part VII., Lichens and Hepaticæ, pp. 318, by Prof. John Macoun.

Contributions to Canadian Palæontology, vol. III. (quarto). Part II., "On Vertebrata of the Mid-Cretaceous of the North-west Territory," by Professor Henry Fairfield Osborn and Mr. Lawrence M. Lambe, 81 pages, illustrated with numerous text-figures and twenty-one photogravure plates, viz.:—

1. Distinctive characters of the Mid-Cretaceous Fauna, by Prof. Henry Fairfield Osborn;

2. New genera and species from the Belly River series (Mid-Cretaceous), by Lawrence M. Lambe;

Field Work.

As in the previous year, as many field parties as our funds would permit of were sent out, including some under the control of geologists not connected with the Survey, but employed for the season only. Twenty-two parties or geologists, working independently of each other, were engaged in field operations. In some cases where the assistants were able to do good topographical or geological work, the party was divided after reaching its ground and the two sections worked separately for the greater part of the season, so that the total number of field officers operating independently may be said to have been twenty-seven. Most of these officers remained out during the whole season, but a few of them for a shorter period.

Twenty-seven field officers at work.

Following the plan adopted last year, the report of each field and staff officer is given separately and as the field operations and other work of the department are thus fully explained, it is only necessary for me here to give a brief outline of the former, enumerating the regions covered in their order from north-west to south-east, as in last year's Summary Report.

R. G. McConnell's survey of Macmillan river.

The most northerly expedition was that of Mr. R. G. McConnell, who, with Mr. Joseph Keele as assistant, made an instrumental topographical survey and a geological reconnaissance of the Macmillan river, a stream nearly as large as the Ottawa, which falls into the Pelly from the east, a short distance above the point where the latter joins the Lewes to form the Yukon. On reaching the forks of the Macmillan the instrumental survey was discontinued and Mr. McConnell explored the northern branch, while Mr. Keele traced the southern. In addition to the work done along the main river and its branches, the hills and mountains on either side were ascended at frequent intervals for the purpose of examining the rocks. It was found that from the mouth of the river to the highest points reached, the main stream and both its branches flowed over crystalline rocks, mostly altered sediments. Samples were collected from a number of quartz veins and it was hoped that some of these would be found to contain gold, but on assay in the laboratory of the Survey, none was found. The results of the above work are, therefore, valuable principally on account of the new topography and geology acquired, as well as the general information in regard to the nature of the country through which the Macmillan river flows.

Barren quartz veins.

Vancouver island.

Up to the past season, no examination had been made by the Geological Survey of the outer or south-western coast of Vancouver island, except for a few miles at the north-western extremity. As it had become important to obtain information in regard to the rocks and pos-

sible economic minerals of this coast, it was decided to send a party to work there. For this service, Mr. Arthur Webster, a former member of the staff and Professor Ernest Haycock of Acadia College, Wolfville, Nova Scotia, were selected. The coast, being bold and exposed to the sweep of the Pacific ocean, was found difficult to examine by means of a small boat. Still, these gentlemen succeeded in exploring it from the Straits of Fuca to within a short distance of the north-western extremity of the island. From their reports it will be seen that along the whole coast, granites and basic eruptives are largely developed, while unaltered sedimentary rocks are frequently found resting upon them. Ores of copper occur in several places and in some instances they appear to exist in promising quantities.

Survey by Webster and Haycock.

Ores of copper.

Dr. R. A. Daly continued the work begun the previous year along the International boundary between British Columbia and the State of Washington and to a distance of ten miles to the northward of it. The rocks examined in the field consist mostly of altered sediments and eruptives. Dr. Daly is now making a petrographic study of these rocks and of the structural and physiographic geology of the ground he worked over.

Dr. Daly's work.

Mr. James M. Macoun was employed as naturalist near the International boundary in the same region as Dr. Daly. Besides studying the fauna and flora on the ground, he made valuable collections of mammals, birds and plants.

J. M. Macoun, Naturalist to Boundary Commission.

Mr. R. W. Brock and Mr. W. H. Boyd investigated a mining area of about fifteen miles square around the town of Greenwood, in the boundary district in British Columbia. The latter attended to the topographical work, while the former traced out the limits of the various rock-masses and studied their petrography. A map of this area is being prepared to show the geology and the hill-features by means of contour lines.

Greenwood mining area.

In the region between the Slave and Peace rivers of the great Mackenzie basin, Mr. C. Camsell worked in the district to the westward of Fort Smith, which is situated about midway from Athabasca lake to Great Slave lake. He made a track-survey of a canoe-route between the Slave and Peace rivers, but his principal work consisted of investigations as to the occurrence of salt and gypsum in the Devonian rocks of this country. He went by the Athabasca river and returned by way of the Peace.

Explorations in the Mackenzie basin.

Salt and gypsum.

Among the Rocky mountains and along their eastern flanks, coal of good quality occurs in great quantities in Cretaceous rocks for a long distance northward from the International boundary. In the Crows-nest Pass coal-field, which is being developed on the line of the Canadian

Crows-nest coal field.

Section.

Pacific railway, in a total section of 4,736 feet there are 22 seams with an aggregate thickness of 216 feet of coal, of which over 100 feet are workable under present conditions. Coal basins run with some interruptions for hundreds of miles northward from the Crows-nest Pass. In the foot-hills on the east side of the Rocky mountains, the coal seams are repeated and they are traversed by the southern branch of the Canadian Pacific railway in the district of Alberta. During the past season the geology of a considerable area of the coal belt in the vicinity of Blairmore was investigated by Mr. W. W. Leach. A map of this area by Mr. Leach accompanies his report in the present volume, in which much valuable information is given as to these coal-bearing rocks. Coal crops out in many places and is probably widely distributed in our prairie region east of the Rocky mountains. This abundance of good fuel will add greatly to the value of these agricultural lands.

W. W. Leach's report and map.

Mr. Dowling's work in Manitoba and Assiniboia.

Lignite of Tertiary age is found in seams of moderate thickness in the Turtle mountain region of southern Manitoba and in the Souris river country, lying to the westward, in Assiniboia. These lignites were investigated last season by Mr. D. B. Dowling and found to be of more economic value than had been supposed. Mr. Dowling also made some investigations in connection with the occurrence of gypsum between Lakes Winnipeg and Manitoba.

Gypsum.

Albany and Severn rivers.

Between the head-waters of the Albany and the Severn rivers, a large region remained unexplored both geographically and geologically. During the past season part of this was examined by Dr. Alfred W. G. Wilson, assisted by Mr. Frank Johnson. It proved to be a level country with here and there a low ridge or knob of Laurentian gneiss. Two narrow belts of Huronian schists were found.

Explorations on James bay by W. J. Wilson and O. O'Sullivan.

On the west side of James bay, three good-sized rivers remained to be surveyed. One of these, the Kapiskau, falls into the bay between the Attawapiskat and the Albany, while the two others lie between the Albany and the Moose. These were surveyed, both topographically and geologically by Mr. W. J. Wilson and Mr. Owen O'Sullivan. On all these streams they met with only the same nearly horizontal Devonian rocks which had been found by myself on all the other principal rivers to the west and south of James bay, and these rocks were also overlaid everywhere by a thick mantle of stiff clayey till, like that along the streams which had been previously surveyed. The economic minerals of this region consist of gypsum and clay-ironstone in the Devonian strata, while workable beds of lignite, apparently of considerable extent, occur in the drift along the Moose river and some of its northern branches.

Lake Nipigon maps.

In 1901 it was decided to complete two of our regular topographical and geological map-sheets, each covering 72 miles from east to west by 48 miles from north to south, in order to show the whole Lake Nipigon region, the lake itself occupying the central portion of the united sheet. The field-work necessary to complete the west half of the southern sheet was done by Dr. Alfred W. G. Wilson in 1901, and that required in the east half of this sheet by Dr. W. A. Parks of Toronto University, the same season. In 1902 the latter worked out the requisite details in the east half of the northern sheet, while Mr. William McInnes finished the west half of the same sheet. The resulting topographical and geological map of the whole country around Lake Nipigon, measuring 72 miles from east to west and 96 miles from north to south, is well advanced. It is a valuable addition to the geography of Northern Ontario and the distribution of the different rock-formations is such that it shows a considerable diversity of geological colouring.

Work done by Drs. Wilson and Parks.

By William McInnes.

Bruce copper mines.

Discoveries of copper have been made in the last few years in the country behind the Bruce Mines on the north shore of Lake Huron, and it was considered desirable to make a more detailed geological survey of this district. Accordingly, Mr. E. D. Ingall, Chief of the Mines section of the Survey, was instructed to undertake this work. He was assisted by Mr. T. Denis, also of the geological corps, and a survey was made of a tract embracing about twenty miles square in the country immediately north of the Bruce Mines, most of which is now settled. Another season will be required to trace out accurately the remaining geological lines of this area. We shall then have a map showing better than does the existing one, the boundaries of the rock-formations in this interesting part of the original Huronian area.

Surveys by E. D. Ingall and T. Denis.

Nickel ores of Sudbury.

Dr. A. E. Barlow was instructed to continue his researches among the nickel-bearing rocks of the Sudbury district. These have been found to belong to three belts—a northern, a middle and a southern. The rocks of this district have proved to be of considerable lithological interest. The various granites and greenstones have been differentiated and the relations of the nickel deposits to them determined to a considerable extent.

Work by Professor Adams and Dr. Barlow for the Haliburton sheet.

Professor F. D. Adams and Dr. A. E. Barlow had been engaged for several seasons in working out in detail the geographical distribution of the subdivisions of the Laurentian rocks within the limits of one of our regular map-sheets, covering an area of 72 miles from east to west, by 48 miles from north to south. This map has been called the 'Haliburton sheet.' Dr. Adams visited this region during the past summer in order to ascertain some details required to finish the mapping of certain geological lines. The engraving of this map in black has been

completed for more than a year and now that the geology has been laid down upon it, only the latter remains to be engraved and printed. In the region covered by the Haliburton map, there is an unusual variety of Laurentian rocks, and these have now been mapped with so much care that this will be the most complete representation of an Archæan area yet produced in America. A map of a portion of the same area, with some additions, has been completed on a larger scale and will be published about the same time.

Surveys for Kingston map by Dr. R. W. Ells and Mr. Hugh Ells.

In the country around Kingston, Ontario, Dr. R. W. Ells and Mr. Hugh Ells have nearly finished the field-work necessary for completing the 'Kingston sheet,' the area covered measuring 72 by 48 miles. The irregular contact of the Ordovician with the Archæan rocks runs through the sheet and requires much detailed field-work in order to locate all its sinuosities.

Dr. Chalmers' investigations in surface geology.

Dr. Robert Chalmers, whose time is devoted to surface geology, wells and artesian borings, worked again during the past season in the inter-lake peninsula of Ontario. In addition to investigations connected with underground waters, petroleum, gas and salt, he examined the clay deposits from both a geological and economical point of view. He also traced carefully and mapped out some of the ancient beaches, so well developed in that region, from Lake Huron eastward to the vicinity of the outlet of Lake Ontario. A map showing a portion of the latter work accompanies his report.

Copper mines of the Eastern Townships.

In the copper region of the Eastern Townships (which lie between the St. Lawrence river, on the one hand, and the states of Maine and New Hampshire on the other) it was believed that by studying petrologically the rocks associated with the copper ores, we might be able, by combining the results with the stratigraphy, to recognize and limit more accurately the copper-bearing belts. The field-work and the microscopic study connected with this investigation were undertaken by Principal Dresser of St. Francis College, Richmond. He has found that the copper ores are confined mainly to three principal belts, consisting mostly of basic eruptives. The results of his work promise to lead the way to discoveries of economic value.

Discoveries by Principal Dresser.

Dr. Ells' investigation of the petroleum of Gaspé.

Dr. Ells was instructed to investigate the petroleum problem in the peninsula of Gaspé, which forms the extremity of the land on the south side of the lower St. Lawrence. For more than half a century the existence of petroleum in this region has been known to the Geological Survey. For a number of years back, the district has been exploited by companies formed in Europe and many deep wells have been bored. Until last year, it was difficult to secure much reliable information as to the results that were being obtained. But all the

obstacles having been removed, Dr. Ells was able to collect, during the past season, full and accurate information as to the outcome of the operations of all the different companies. This is a matter of great importance, and, owing to the facilities afforded Dr. Ells for his investigations in all parts of the reported oil region, he has been enabled to prepare an interesting report on the whole subject.

Prospect of finding coal in Prince Edward Island.

The same gentleman also spent a part of the season in investigating questions as to the possibility of finding coal within workable depths in Prince Edward Island. As a result, boring operations will probably be commenced next year by the local government in the hope of finding coal seams within reach under the Upper or Permo-Carboniferous rocks of the island.

Surveys in New Brunswick by Professor Bailey and Mr. Johnston.

The northern interior of New Brunswick, or the region around the head-waters of the Tobique and Nepisiguit rivers, was further explored by Professor L. W. Bailey of the University of New Brunswick, who has worked for the Survey for many years. Dr. Bailey was assisted by Mr. Robert Johnston of the regular staff. Their exploration shows that further investigations will be required before the geology of that region can be satisfactorily laid down upon a map.

By Mr. H. S. Poole in New Brunswick and Nova Scotia.

Mr. H. S. Poole, who had been engaged during the season of 1901, in going over the Carboniferous rocks of New Brunswick in the hope that he might discover a possibility of the occurrence of workable coal seams, was requested to examine the region lying around Chignecto bay, so as to confirm or correct our previous mapping of the rock-formations in that neighbourhood and to establish more clearly the relations of the Carboniferous rocks of New Brunswick and Nova Scotia.

Gold districts of Nova Scotia mapped by Mr. Faribault.

Mr. E. R. Faribault has been engaged for a number of years in making topographical and geological surveys of the gold districts of Nova Scotia and mapping each one separately. He spent a part of the year in preparing several of his plans of these districts for publication and the remainder of his time in the field. He was again assisted by Mr. A. Cameron and Mr. J. M. Cruickshank, who have been engaged on this kind of work with Mr. Faribault for a number of years.

Coal mines of Nova Scotia.

Mr. Hugh Fletcher was again engaged in Nova Scotia, principally on work connected with the coal-bearing rocks. On account of his familiarity, from past experience, with the geology of the various coal fields of Nova Scotia, which are now undergoing active exploration or development, his services were requested to visit different places where new work was in progress, in order to give advice as to the best course to pursue by the operators. The latter part of the season was devoted to a continuation of his investigations in the Springhill coal-field. He

Springhill.

was assisted by Mr. McLeod and Mr. Allan McKinnon. The various kinds of work in which he and his assistants were occupied are described in his report in this volume.

Inspections by Dr. Bell.

My own field-work consisted of visits of inspection to the Michipicoten district, Lake Superior, the region behind Bruce Mines, Lake Huron, where Mr. Ingall and Mr. Denis were at work, the county of Frontenac, the copper discoveries near Matane on the south side of the St. Lawrence about 220 miles below Quebec, and to some of the gold and coal districts of Nova Scotia, including Cape Breton.

Exploration of Albany district by Jabez Williams.

I should here mention that Mr. Jabez Williams, an officer of the Hudson's Bay Company, now resident at Osnaburgh House, who has a good knowledge of prospecting, has sent me a report on an exploration which he made the previous year of a tract of country lying north of the section of the Albany river between Eabamet and Martin falls, of which we had previously but little geological knowledge. Mr. Williams' report was accompanied by a collection of specimens of the rocks which he met with. The report and specimens will aid us in mapping the geology of the Albany district, and the thanks of the department are due to Mr. Williams for this valuable contribution.

Contributions by A. P. Low.

We are also indebted to Mr. A. P. Low, (for many years a regular member of the staff of the Survey) for several original maps and a detailed report on the geology of the Hopewell group of islands and a number of the islands of the Nastapoka group, on the east side of Hudson bay. Mr. Low did the field-work in 1901 for the Dominion Development Company of Philadelphia, which kindly consented to allow him to present these valuable results to the department for publication. The maps have been used in the compilation of the sheet that is being engraved to accompany Mr. Low's report for 1900, which is to form part of volume XIII., (N.S.,) of our regular annual reports.

Supplement to J. B. Tyrrell's work in the Yukon district.

In 1896 Mr. J. B. Tyrrell, before severing his connection with the Survey, made an examination of the Dalton trail from the head of the Lynn canal to the Lewes river in the Yukon district, but he deferred sending in his report on this work until he could obtain petrographical descriptions of the series of rock-specimens which he had collected while engaged upon it. Thin slices of these specimens have been made in Germany and with the aid of these, Dr. Barlow is drawing up a description of this series of rocks, to be forwarded to Mr. Tyrrell, who is now residing at Dawson, Yukon district.

Report on E. Coste's map of Madoc and Marmora.

In 1883, Mr. Eugene Coste made a geological examination of the townships of Madoc and Marmora for the Survey, and the map to illustrate his report was engraved and printed in colours the following year. It is now expected that Mr. Coste will furnish a report on the above work to be issued along with this map.

Geological Nomenclature and the Colouring of Geological Maps.

Uniform syssem of Geological nomenclature necessary.

The want of a uniform system of geological nomenclature and map-colouring, applicable to the whole of North America, has long been felt. This has been the case more especially in late years when it has become necessary to colour geological maps of large areas, so that they may be in harmony on both sides of the International boundary. There is likewise a lack of uniformity as to the terms which are employed to distinguish the various geological periods. The absence of a general agreement in these matters was also felt many years ago by the geologists of all the countries of Europe and it was from this circumstance that the International Geological Congress arose in 1876.

In 1881, the late Dr. Selwyn proposed a scheme of geological nomenclature and of colouring of geological maps, in order to secure uniformity in the reports and maps of the Canadian Survey, but this was not adopted elsewhere. (See Report of Progress of the Geological Survey of Canada for 1880–82, pp. 47 to 51).

In 1901, the geological and biological section of our Royal Society (Section IV.) seeing the necessity of moving in this important matter, passed a resolution, requesting the writer to convene a committee of geologists of his own choosing, to consider all matters connected with the nomenclature of geological divisions in Canada. The following report explains what was done in the matter.

Report of the Committee of the Royal Society on the Nomenclature of Geological Formations in Canada.

Ottawa, 22nd May, 1902.

The Secretary,
Section IV, Royal Society of Canada,
Toronto.

Action taken at Royal Society meeting.

Sir,—At the last meeting of the Royal Society, I was requested by Section IV to select a committee of geologists, of which I was to act as convener, to take into consideration The Nomenclature of Geological Formations in Canada.

In the beginning of May, a committee for this purpose was named and a meeting called for the 10th, of the month. The following geologists were invited and all accepted :—Dr. J. F. Whiteaves, Dr. R. W. Ells, Mr. Hugh Fletcher, Mr. R. G. McConnell, Dr. Robert Chalmers, all of the Geological Survey, Professor W. G. Miller, Provincial Geologist, Toronto, Professor F. D. Adams, McGill University, Montreal,

Mr. B. E. Walker, Toronto, Dr. George F. Matthew, St. John, N.B., Professor H. S. Poole, Dalhousie University, Halifax.

The meeting called for the 10th of May, was held in my office in Ottawa and was attended by all the members, except the three last mentioned. Mr. Walker was about to sail for Europe and Dr. Matthew and Professor Poole were unable to come so far.

Opinion of committee.

After considerable discussion, it was the general opinion of the committee that there is need for a uniform and better understanding as to the significance, not only of the proper names in use (for the divisions of the geological scale), but as to the relative comprehensiveness and classification of geological divisions themselves.

The unnecessary multiplication of so-called formational names was deprecated and it was felt that it would be advantageous if some method could be adopted by geologists, which would allow of a general consideration or discussion of proposed new names for divisions of rocks before they were recommended for adoption.

Dr. J. F. Whiteaves, Mr. H. Fletcher, Mr. McConnell and Dr. Adams were appointed a sub-committee to consider the names of the various divisions of the whole sedimentary series in Canada, from the Archæan up to the Pleistocene.

Co-operation of United States and continental geologists desirable.

It was considered desirable that the present committee should be authorized by section IV to enter into correspondence with the Geological Survey of the United States or any other body of geologists on the continent, with a view to securing, as far as possible, greater harmony and uniformity in the nomenclature of geological divisions, subdivisions and masses of rocks of all ages throughout North America.

The committees then adjourned with the intention of meeting, if possible, during the session of the Royal Society in Toronto.

Respectfully submitted.

(Signed) ROBERT BELL,
Convener.

The foregoing report was read at the Toronto meeting, at which it was adopted and the committee continued, with power to add to its numbers.

Conference with American geologists in Washington.

Later in the year, after some correspondence on this subject with Professor Charles D. Walcott, Director of the Geological Survey of the United States, and Professor C. R. Van Hise of the same Survey,

who has taken a great interest in the matter, it was arranged that the writer should meet and confer with these gentlemen in Washington. Professor Walcott named Dr. C. W. Hayes and Professor Van Hise, to meet Dr. F. D. Adams and myself as a joint committee to discuss the whole matter and make arrangements for carrying out the objects in view. The results are given in the following document :—

Minutes of meeting of joint committee on nomenclature, consisting of Drs. Robert Bell and Frank D. Adams, representing the Canadian Geological Survey, and C. W. Hayes and C. R. Van Hise, representing the U. S. Geological Survey, held at Washington, D.C., January 2, 1903.

C. W. Hayes in the chair.

Present also Messrs. Bell, Adams and Van Hise.

1. It was agreed that the committee, as constituted by mutual consent between the Directors of the two Surveys concerned, should form a permanent committee and should appoint sub-committees for the consideration of questions of nomenclature in various regions along the United States-Canadian Boundary. It was agreed that the nomenclature of these regions should be taken up as rapidly as the necessary information for a satisfactory adjustment should become available, and that during the coming year the questions of nomenclature in the Adirondack and Lake Superior regions should be considered. Sub-committee selected.

2. It was agreed to submit questions of nomenclature in the Adirondack region to a sub-committee, consisting of Messrs. Van Hise and Adams, who were instructed to confer and report their recommendations to the full committee.

3. It was agreed that questions of nomenclature in the Lake Superior region should be considered by a joint sub-committee, consisting of Prof. C. R. Van Hise, Mr. C. K. Leith, and, by invitation, Dr. A. C. Lane, State Geologist of Michigan, on the part of the United States, and Acting Director Robert Bell, Prof. Frank D. Adams, and, by invitation, Mr. W. G. Miller, Geologist for the Province of Ontario, on the part of Canada.

4. It was agreed that this sub-committee should make arrangements by correspondence between Messrs. Van Hise and Bell, Chairmen of the sub-committees, for a joint field conference during the coming field season.

5. It was agreed that the permanent joint committee should hold a meeting in connection with the next winter meeting of the Geological Society of America, and, if necessary, other meetings at the call of the Chairman.

(Signed) C. W. HAYES,
Chairman.

Shortly after the above meeting had been held, it was found that some of the American geologists who had been designated would not be able to proceed to carry out the necessary joint field-work this season, and it was, therefore, agreed to postpone active operations till next year. Meantime, it is expected that some progress towards the ends desired, will be made by a more careful study of the reports which have been written as to various controverted points and by conferences in regard to them. It is confidently expected that the active combined field-work of the committee will be commenced in the spring of 1904.

OFFICERS REPORTS.

The Macmillan River, Yukon District.

Mr. R. G. McConnell.

Work by R. G. McConnell and Joseph Keele.

The work during the season of 1902, consisted in making an examination of the Macmillan river, one of the principal feeders of the Pelly. I left Ottawa on the 7th of June, accompanied by Mr. Joseph Keele, and reached Whitehorse, where we outfitted, on the 17th of June, and Fort Selkirk at the mouth of the Pelly, on the 22nd. Two days afterwards we proceeded up the Pelly river, carrying our summer supplies in two Peterborough canoes which we had brought with us from Ontario.

The party consisted of Mr. Keele, who acted as topographer and assistant geologist, the writer, and two canoemen from Sault Ste. Marie. We were delayed on the Pelly by the flooded condition of the river, the highest rise of the season occurring on June 29, and did not reach the mouth of the Macmillan until July 5.

Survey of Macmillan river.

The early part of the season was occupied in making a traverse by micrometer up the Macmillan to the forks, a distance of about 150 miles. The micrometer traverse was afterwards continued by Mr. Keele up the South fork for a further distance of fifty miles. The North fork proved to be an exceedingly rapid stream, very difficult to ascend, and as time was limited and it was important to explore both branches, Mr. Keele was directed to survey as much of the South fork and its tributaries as possible, while the writer continued on up the North fork. This was ascended to a point a few miles above Cache creek, and then the latter stream was followed to its head. We had been informed that it headed with Peel river, but this proved to be incorrect. The valley occupied by Cache creek connects the Macmillan with the South fork of the Stewart, and from the top of a mountain at its head, which was ascended, the valley of the Stewart could be traced at least thirty miles in a north-easterly direction. The head of

Cache creek, the farthest point gained, was reached on August 12, and on the 13th we commenced the return journey. A number of mountains had been selected for climbing on the way up, and stoppages of from one to three days were made at those points on the way down. A micrometer traverse was also made of the Pelly from its junction with the Macmillan to Fort Selkirk at its mouth.

General Description of Macmillan River.

The Macmillan river has a total length of about 285 miles. It divides at 150 miles above its mouth into two nearly equal branches, known as the North and South forks. The North fork carries the most water, and has a length of about 135 miles. The South fork is probably of nearly equal length. Length of North and South forks.

The main river, in its lower reaches, is a winding stream varying in width from 300 to 500 feet. The current is sluggish, seldom exceeding, in the first fifty miles, a rate of three miles an hour. The valley has a width of from one to five miles or more and is covered with a heavy deposit of clays, silts, sands, gravels and boulder clay. The river has cut a great trench in these deposits usually about 200 feet in depth, and from one mile to two miles in width, and now winds from side to side of this depression, occasionally cutting into and destroying portions of the bordering banks. In the lower portion of the river the cut banks consist largely of a bluish plastic clay, and at several points great masses of this material have slidden forward and in some instances formed barriers extending nearly across the river. The drift plain bordering the river banks is bounded on both sides by ranges and groups of hills and mountains, rising from 2,000 feet to nearly 5,000 feet above the level of the valley. Cut banks of plastic clay.

The easy current characteristic of the lower portion of the Macmillan is interrupted about fifty miles above its mouth, by a stretch of comparatively rapid water five or six miles in length, above which the current is again generally slack for a further distance of fifty miles, although a few riffles occur. In the upper fifty miles, the current becomes much swifter, flowing at a rate of from three to five miles an hour. The swiftest stretches occur at places where the stream has recently broken through the necks of ox-bow bends, and so shortened its course. The greater portion of the river is easily navigable, except at low water, by small steamers. Navigable by small steamers.

The principal difficulty occurs at Porphyry bluff. The river at this point runs swiftly around a number of sharp bends and the channel is filled with snags. The latter could easily be removed if necessary. The grade of the Macmillan was estimated at from one to two feet per

mile in the lower portion of the river and from two to four feet in the upper portion. The average grade throughout, probably amounts to about three feet to the mile and the total fall from The Forks to the Pelly is estimated at 450 feet.

Principal streams entering Macmillan river.

The principal feeders of the Macmillan below The Forks are Kalzas river, Moose river and Russell creek. The streams are all northern tributaries, no important feeders entering the river from the south. Kalzas river, which joins the Macmillan twenty-seven miles above its mouth, is a large rapid stream about sixty feet in width. It forks a short distance above its mouth, the principal branch occupying a wide terraced valley, which extends in a north-easterly direction for a distance of about forty miles. The north-westerly branch empties Kalzas lake, a sheet of water about six miles in length, lying behind the Macmillan mountains. This branch follows part of an old valley, which has been traced from the Pelly, in a north-westerly direction to the Klondike and beyond. This valley is occupied in different parts of its course by a portion of the Pelly, a branch of Kalzas river, Crooked creek, a portion of the Stewart river, Clear creek, Flat creek, and the lower part of the North fork of the Klondike river. This ancient drainage channel is an important topographical feature of the country, and may prove to be of economic value, as gold may be concentrated in portions of its course. It runs in a north-westerly direction, crossing the present main drainage channels diagonally, and has a width of from two to ten miles or more. In the glaciated area, it is bordered by wide terraces built up of silts, sands, gravels and boulder clay, and in the unglaciated area, north of the Stewart, it is filled to a depth of at least 600 feet with sand and gravel.

Ancient drainage channel.

Moose river.

Moose river, which enters the Macmillan about midway to the Forks, also occupies an old valley which extends in a north-easterly direction to the South fork of the Stewart, but has not been traced beyond. Moose river is a winding stream about 50 feet in width and a length measured along the valley of about eighteen miles, but following the windings of the stream it is fully twice this distance. It is the outlet of Moose lake, a body of water about eight miles in length occupying a depression in the floor of the old valley.

Russell creek.

Russell creek (Red Slate creek) joins the Macmillan about four miles below the Forks and is important as being the only tributary, so far, on which coarse gold has been found. It heads in a small lake 12 miles north of the Macmillan, and has a total fall of 1,400 feet. It is a rapid stream about 40 feet in width and is fed by a number of impetuous torrents descending from the mountains bordering its valley. The valley of Russell creek is from one to three miles in width and extends through to the Stewart drainage system.

Recent elevation in this valley is shown by the fact that the present stream has cut in places a canyon in the bottom of the old channel.

Mountainous character of country.

Topography—The general character of the country in the vicinity of the Macmillan is mountainous, although the ranges as a rule are isolated by wide valleys and depressions. Below Kalzas river the Macmillan is bordered on the north by the Macmillan mountains ; a long ridge with fairly even slopes except near the centre, where it rises about 1,000 feet above the tree line and is broken into a number of rocky peaks, the highest of which has an elevation of about 3,800 above the level of the river or 5,600 feet above the sea. Opposite the Macmillan mountains the country between the Macmillan and the Pelly is occupied by a high plateau-like mass with smooth outlines, the summit of which rises just above tree line to an elevation of about 2,700 feet above the valley. East of this plateau is a wide depression, extending east to Dromedary mountain and south to the Pelly. This depression is faced on the north of the Macmillan by Kalzas mountain and the range connected with it. Kalzas mountain rises 4,300 feet above the valley and is the highest peak along the main Macmillan river. North- east from it, at a distance of ten miles, is Clarks peak, a conspicuous conical mountain, visible from almost every elevation climbed to, along the river.

The region north of the Macmillan, between the valley of Moose river and Russell creek, is occupied by a high broken plateau, deeply trenched by numerous streams flowing into the surrounding valleys. South of the Macmillan the country bordering on the valley, with the exception of a couple of relatively unimportant depressions, is rough and mountainous from Dromedary mountain east to the Forks. The mountains, mountain groups, and broken uplands along the Macmillan valley have a common origin and may be briefly described as representing surviving fragments of an extensive highland, the major portion of which has been destroyed by sub-aerial denudation and erosion.

The North Fork of the Macmillan.

Description of North fork of Macmillan river.

The Macmillan, a few miles above Russell creek, separates into two branches known as the North and South forks. The two branches are nearly equal in size, but the former carries a much larger volume of water. The North fork, although it continues for some miles in the same direction as the main Macmillan and occupies a similar wide flat bottomed valley, differs entirely in character.

It is an exceedingly rapid stream and bears more resemblance to a mountain torrent than to an ordinary river. Between the Forks and Cache creek, a distance of 45 miles, measured along the valley, and

about 70 miles following the windings of the river, the valley has a fall of about 18 feet to the mile and the river of about 12 feet to the mile. The current is uniformly swift throughout, running at the rate of from five to eight miles an hour. The channel in places is filled with boulders, and strong riffles are frequent, especially for some miles above and below the mouth of Husky Dog creek, but no strong rapids necessitating portages occur below Cache creek. Two and a half miles above this is the Big Alec rapid, a rough bed rock rapid a quarter of a mile in length. Above this rapid the stream continues very swift as far as examined.

Rapid current.

The direction of the North fork is generally a few degrees north of east, except in one stretch 10 miles in length commencing 25 miles above its mouth measuring along the valley. The river at this point enters an old valley running nearly magnetic north and south and follows it north to the mouth of Husky Dog creek, then leaves it abruptly and continues its easterly course. The old valley just referred to extends south to the South fork, and north probably to the Stewart and is occupied in turn by a number of streams along different portions of its course.

Tributaries of North folk.

The principal tributaries of the North fork are Barr, Husky Dog and Cache creeks from the north and Clearwater creek from the south. These streams all carry considerable volumes of water, and occupy deep, wide valleys. Cache creek, the only one examined, has a width of about 50 feet, and a length measured along the valley of 20 miles. The valley of this creek is wider than that of the main stream and extends through to the South fork of the Stewart. The summit is close to the Stewart valley and the drainage is all southward.

Topography.—The North fork below Barr creek is bordered on the north by a long ridge and on the south by a high wooded plateau. Six miles above Barr creek the river bends suddenly northward, between two lofty mountain ranges, and for the remainder of its course traverses a continuously mountainous country. The name Selwyn range is proposed by the writer for this group of mountain ranges. The summit range of the Selwyn mountains forms the Yukon-Mackenzie watershed—and the whole group may be considered as one of the sub ranges of the Rocky mountains. The central portion of the range is drained on the west by the North fork of the Macmillan and the South fork of the Stewart and on the east by Gravel river, all large, rapid streams. The north and south limits of the range have not yet been defined.

Selwyn range.

Description and height of.

Selwyn range differs from the main range of the Rocky mountains further south in consisting of a number of irregular groups

of mountains and not of a series of parallel longitudinal ridges. This feature is due largely to the presence in the range of several large granite masses, cutting the argillites and cherty rocks of which the mountains are mainly formed. The mountain groups are occasionally separated from each other by wide, low passes connecting the main drainage line. The mountains have a height of from 3,000 to 5,000 feet above the valley, or from 6,000 to 8,000 feet above the sea. Their general appearance is rather subdued, as the argillites and cherts when horizontal, or nearly so, weather into rounded elevations without marked individuality. The sculpturing in the granite areas is, however, bolder and more rugged, and the shattered pinnacled crests which often surmount the ridges of sharply tilted cherts and agglomerates, give variety to the view.

The South Fork of the Macmillan.

South fork Macmillan river.

The South fork at its entrance to the main river is very unlike the North fork. It is rather wider, having a width of 250 feet: the current is slack for several miles above its mouth, the colour of the water is much darker and the temperature slightly higher than that of the North fork. The stream as far as examined has many of the characteristics of the main river. For the first twenty-five miles following the windings of the stream the average grade is about three feet to the mile, from this to the canyon the grade is probably five feet. The speed of the current varies from two to five miles an hour, with occasional accelerations. Fifty-eight miles from the Forks is a canyon about half a mile in length, the river breaking into three rapids on its course through it. Beyond the canyon the valley widens out, the grade increases and the river runs swiftly around sharp bends and resembles the North fork in character during the remainder of its course.

General direction.

Principal tributary.

The general direction of the South fork is south-easterly, but toward the head it appears to bend to the north, and one of its upper branches heads quite close to those of the North fork. The first tributary stream enters the South fork from the south at a distance of twenty-four miles from the Forks; beyond this are several small streams coming in from both sides. The principal tributary is Riddell river entering from the south, forty-six miles from the Forks. This river is 125 feet wide, the water is of a brown colour, and the current is slack, moving at the rate of about two miles an hour at the lower portion; the grade increases slightly, higher up the stream, with occasional small riffles.

Branches of Riddell river.

Twenty-six miles above its mouth Riddell river breaks into two branches of about equal volume, the one from the south coming in with

the velocity of a torrent, beyond this the easterly branch is still water for about a mile, then becomes swift and the river from this point onward is impassible with canoes.

Topography.—The valley of the South fork bears such close resemblance, both in grade and cross section, to the main river valley, that it may be regarded as a continuation of the latter.

For about ten miles by the valley above the Forks the South fork is bordered on the south by long ridges of fairly regular outline rising from 500 to 1,200 feet above the valley, these slope gently back from the river banks and are thickly covered with moss and small spruce. Beyond this the ridges become lower and recede from the river, the valley widening out on both sides. Sixteen miles, by the valley, from the Forks is a very pronounced depression to the north of the river. This depression runs through to the North fork, a distance of about eleven miles. The nature of the floor of this valley is concealed by a thick growth of small spruce and a deep covering of moss, but from the absence of rock exposures and the presence of numerous small lakes it is assumed to be an old valley of erosion, partially filled up by deposits of loose material of glacial origin. The floor of this valley rises to a height of 300 feet above the level of the South fork, and to about 170 feet above the North fork.

Probable old valley.

East of this valley and on both sides of the river are mountain groups, those to the north rise gradually by a series of ridges and culminate in several lofty peaks, which form an important spur of the Selwyn range. The group to the south is known as the South Fork mountain, and bears a rough resemblance to an elevated table land. The watershed of this group is close to the South fork and one of its chief features is the deep channels which the streams have cut in its flanks. Here are seen gorges V-shaped, with walls sometimes 500 feet in height.

South fork mountain.

Beyond the canyon the valley opens out again and widely isolated groups of high mountains are to be seen in the distance to the east and south, while the intervening country presents a succession of low parallel ridges with even outlines. Riddell river flows through this rolling country, slowly cutting down its bed in sand and gravel deposits.

Terraces, well preserved and continuous, are to be seen in this part of the valley: the highest well marked ones were found at an elevation of 600 feet above the river level, or 3,000 feet above the sea.

Terraces.

FORESTS.

The principal tree found along the valley of the Macmillan is the white spruce *(Picea alba)*. This tree is found both in the valley bottoms and on the mountain sides to a height of 2,800 feet above the valley at the mouth of the river and 1,800 feet above the valley at Cache creek. Groves of white spruce with trees measuring from one to two feet in diameter occur on most of the river flats and alluvial islands, and in a few localities individuals of this species were seen which measured three feet in diameter. The groves are small as a rule, but the aggregate amount of good spruce timber in the valley is considerable. Among the other trees noticed may be mentioned the black spruce *(Picea nigra)*, the aspen *(Populus tremuloides)*, the balsam poplar *(Populus balsamifera)*, the black pine *(Pinus Murrayana)*, the balsam fir *(Abies sulalpina)*, and a birch (probably *Betula papyrifera)*. The black pine occurs in large groves on the benches along the lower part of the Macmillan valley and was traced eastward for thirty miles beyond the fork. It seldom exceeds nine inches in diameter. The balsam fir occurs mostly on the mountain slopes and was seldom seen on the river flats. It is found all the way to the tree line, but seems to thrive best at an elevation of 1,200 feet above the valley, the trees gradually decreasing in size above and below this elevation. The birch is usually small and not very abundant.

Timber.

White spruce and black pine plentiful.

The forest along the main Macmillan and up both forks for some distance is fairly luxuriant and very similar to that on the Lewis and Upper Yukon. On the upper portion of the North fork the trees are much smaller and more scattered, and the prevalence of white reindeer moss on benches and mountain slopes contribute a sub-arctic character to the landscape.

GEOLOGICAL SECTION ON THE MACMILLAN AND DOWN THE PELLY RIVER.

The Macmillan valley does not afford a good geological section as it is filled with glacial drift and bed rock is seldom exposed. The frequent long gaps in the valley section, rendered necessary an examination of the bordering ridges and mountains, on all of which good exposures were found. Some time was spent on the Pelly below the mouth of the Macmillan, as only a hurried examination of the rocks was made by Dr. Dawson in 1887.

Macmillan valley filled with glacial drift.

Steep mural cliffs of basalt occur along the right bank of the Pelly above its mouth and rounded hills of massive grey biotite granite on the left bank.

Basalt cliffs

The basaltic plateau occupies the angle between the Pelly and the Yukon and extends down the latter river about twelve miles. It has a height of about 520 feet. A typical well-preserved volcanic cone built largely of vesicular basalt occurs a few miles north of the Pelly. The cone has a height of 2,570 feet above the river, and of about 1,000 feet above the general level of the country in its vicinity. The crater in the summit of the cone has a depth of 450 feet and a width at the bottom of 300 feet.

Comparatively recent lava flow.

The last lava flow, now represented by a ridge of basalt fifty feet high, escaped through a break in the encircling wall of the crater and streamed to the eastward. The date of this volcanic cone is comparatively recent as its outlines have not been modified by denudation to any material extent. It is unlikely that all the basalts in the vicinity issued from this cone and it is probable that other vents will be discovered when the country is closely examined. The basalts are replaced four miles up the valley by grey biotite granite, and the latter, five miles further on, by crystalline schists.

Crystalline schists.

The schists include several varieties, the principal one being a hard quartz-mica schist evidently an altered clastic, garnetiferous schists, chloritic and hornbledic schist, and bands of white crystalline limestone. These rocks are associated in places with granite gneisses and evidently represent the Nasina series described in previous reports as occurring on the Yukon and Stewart rivers and in other localities. They have an east and west strike, and outcrop along the river in frequent exposures up to Willow creek, a distance of over twenty miles. East of Willow creek the Pelly winds through a wide depression filled with glacial deposits, and destitute of exposures of older rocks. The depression extends southward along Mica creek, the outlet of Tatlmain lake and may be underlain by the Cretaceous coal-bearing rocks which cross the Lewes at the Five Finger rapids. Drift lignite was found on Mica creek, and also on the Pelly below the mouth of this creek.

Granite gneisses similar to those in Yukon valley.

The hills which border the depression, just mentioned, on the northeast consist of sheared granite gneisses similar to those along the Yukon valley, and evidently like them of eruptive origin. They are concealed along the river but outcrop in Knob Hill, north of Willow creek and Ptarmigan mountain, south of Granite canyon and also at one point above Gull rock in Granite canyon where they project up into the andesites.

The granite gneisses are overlaid in the valley of the Pelly for some miles below Granite canyon by andesites, and these rocks form the

high valley walls in the lower portion of the canyon. The andesite is associated in a couple of places with soft yellowish tuffaceous sandstones and dark carbonaceous shales. The latter at one point near Gull Rock pass into an impure lignite. These carbonaceous beds are probably of the same age as the lignite-bearing beds at Five Finger rapid which hold Cretaceous fossils. Carbonaceous shales.

East of Gull Rock, a name given to a sharp splinter of andesite forty feet in height in midchannel, the canyon walls consist largely of volcanic bombs. The upper part of the canyon is cut through coarse gray massive granite. Between the upper end of Granite canyon and the mouth of the Macmillan, the rocks exposed in the valley consist of chlorite and sericite schists passing in one place into an augen gneiss. These rocks resemble the Klondike schists which are known to be, in part at least, of eruptive origin.

Macmillan River Section.

The Macmillan mountains north of the lower part of the Macmillan river consist largely of a quartz schist or felspathic quartzite, the precise character of which has not been determined. This rock is coarsely schistose, varies in colour from white to black and is jointed at right angles to the bedding planes. It is interbanded with dark argillites, mica schist and crystalline limestone. Geological description of Macmillan mountains.

A couple of rocky bluffs south of the river, one 1,000 feet in height, are built of white coarsely crystalline limestone containing numerous fragments of crinoid stems, probably indicating Carboniferous age. The limestones overlie chlorite and sericite schists, on which they pro, probably rest unconformably Several small areas of eruptive rocks-mostly granite and andesite, occur in the Macmillan mountains.

The Macmillan mountain beds have a general N.W. and S.E. strike and dip to the S.W.

They are succeeded and apparently underlain, ascending the river, by hard dark argillites, passing in places into quartzite bands and inclosing occasional beds of limestone. These rocks are well exposed in the southerly slopes of Kalzas mountain, and farther to the east in Lone mountain and the summit of Dromedary mountain. They are cut off at the summit of Kalzas mountain by granite, and are apparently underlain on the north-east by a band of breccias or agglomerates consisting mostly of angular fragments of dark and occasionally green and red cherts, imbedded in a siliceous matrix. The chert breccias form the eastern part of the Kalzas range

and also outcrop in the lower slopes of Dromedary mountain south of the river.

The chert breccias are followed, apparently in descending order by slates, alternating in places with dark cherts, and then by a great series of tuffs, grits, quartzites and red, green, gray and striped slates and schists. The red slates and associated rocks occur along the Macmillan from a point a few miles above the mouth of Moose river up to the Forks and beyond. They form the greater part of Plateau mountain north of the Macmillan and the Russell mountains east of Russell creek. A wide band of dark brittle cherts interbanded with the red slate series crosses Plateau mountain west of the summit, and massive amygdaloids passing in places into a schist outcrop north of the valley a few miles below the mouth of Russell creek.

The red slate series, like the beds in the lower part of the river, have general north-west and south-east strikes and south-west dips. The attitude of the beds apparently indicate a descending series from the mouth of the Macmillan to the Forks, but the regularity of the dip is probably due in large measure to faults and over turn folds.

Rocks divided into two groups.

The rocks along the main Macmillan may be divided tentatively into two great groups. One group consisting of argillites, quartz schists, quartzites, and limestones and the other largely of volcanic fragmental rocks including tuffs, felspathic grits, and red, green, brown and striped schists. The latter group are interbanded with and are overlain by cherts and argillites above which are chert breccias.

Section of the North Fork.

Great thickness of cherts.

Striped and green schists belonging to the red slate series are exposed on the North fork for some miles above its mouth and are then replaced by dark argillites holding occasional beds of limestone. The argillites are less altered than the red schists and associated beds, and the cleavage planes are subordinate to the bedding planes. They are probably the equivalents of the argillites and cherts which overlie the red slate series on the main river above the mouth of Moose river. These argillites have a wide distribution as they are found all along the North fork up to the mouth of Cache creek and on the lower part of Cache creek. Above the mouth of Husky Dog creek they alternate with dark, brittle, flinty beds, which are referred to as cherts, and are largely due to an infiltration of the argillaceous beds by amorphous silica. These cherts occur both in thin beds, and in bands up to a thousand feet or more in thickness. They are the most prominent rock in the Selwyn range.

The schists and quartzites of the red slate series were noticed at several points along the North fork, especially in the vicinity of the eruptive masses but no large areas were determined.

The argillites and associated cherts are replaced near the head of Cache creek by an alternating series of chert breccias, shales, and dark limestones at least 5,000 feet in thickness. The chert breccias resemble those in the Kalzas range north of the main Macmillan and are apparently a repetition of the same series. The angular chert fragments, the principal constituent of the breccia is precisely similar to the chert beds and bands found lower down the river and are no doubt derived from them.

The North fork section may be summarized as consisting of three sets of beds, viz.: a lower series of red, green, and striped schists, with tuffs and quartzites, a middle series of argillites and cherts, and an upper series of chert breccias and shales.

South Fork Section.

Rock section on South fork of main Macmillan.

The rocks on the South fork of the main Macmillan are similar to those on the North fork. The red and green schists occur near the mouth, but are soon replaced by argillites and cherts, and the latter twenty miles above the Forks are followed by chert breccias, shales, sandstones and limestones which continue as far as the mouth of Riddell river. Beyond this the rock is principally shale of a compact variety, which becomes hardened and altered near the intrusive masses. The mountains to the north of the river are composed of granite and those to the south of andesite. The latter rock cuts through the shale of the valley at a height of about 1,500 feet above the river.

About eleven miles above the mouth of Riddell river several dykes cut the shales. These dykes harden the latter, which here form the walls of a narrow canyon about half a mile long. The bed rock of Riddell river is a soft, crumbling, black shale with occasional harder beds. The age is uncertain as no fossils were found, but they are probably younger than the chert breccias.

Igneous rocks

Granites and allied rocks and andesites occur at several points along the Macmillan and its tributaries, but as the specimens have not been examined microscopically only a brief reference will be made to them here. A number of irregularly distributed granite areas occur in the Selwyn range, where they form the central portions of some of the principal mountain groups.

The granite is of the usual gray biotite variety, is often strongly jointed and weathers into conspicuous cliffs and bold rocky summits. Areas of granite also occur east of Russell creek, on northern portion of Kalzas mountain, and crossing the Pelly river a few miles below the mouth of the Macmillan.

The South Fork mountains were found by Mr. Keele to be built largely of andesites, and small areas of this rock occur on the Macmillan mountains, and also at the Granite canyon on the Pelly. The andesites are much younger than the granites and at the Granite canyon are associated with lignite-bearing beds of probably Cretaceous age.

General Glacial Features.

Glacial action.

During the glacial period a glacier descended the Macmillan river valley from the Selwyn mountains to its mouth and continued down the Pelly river to a point about 20 miles above Fort Selkirk. Glacial groovings and striæ occur at a number of places along the bottom of the valley, and on the lower slopes of the mountains bordering the valley up to a height of 1,200 feet. The direction of the ice flow was westerly and coincided very closely with that of the valley. The thickness of the ice, judging from the height at which foreign material was found, was 3,000 feet in the western portion of the Selwyn mountains, 3,300 feet at Dromedary mountain, and 2,000 feet at the Macmillan mountains. The upper surface of the glacier appears to have been nearly level from the Selwyn mountains to Dromedary mountain, the slope being less than that of the present valley, but west of this point the western declination averaged nearly 200 feet to the mile.

Higher peaks of mountains show no trace of glaciation.

The ice even in the Selwyn mountains did not cover the higher peaks or, if it did, has left no trace of its presence, and while the valleys and depressions in the broken country to the west were deeply submerged all the principal elevations remained uncovered.

Glacial deposits.

Foreign material in the Macmillan mountains is found up to a height of 2,000 feet. Below this elevation the slopes are comparatively smooth, but above it the harder bands of rock often project above the surface in crumbling walls and loose rocky points which show no evidence of ever having been disturbed except by the ordinary agents of sub-aerial denudation.

The deposits of the ice period, consisting of boulder clays, gravels, sands, silts, and clays, are exceedingly irregular in distribution and sequence and evidence rapidly changing conditions along the valley.

Geological Survey of Canada
ROBERT BELL, M.D., Sc.D., (Queen's), LL.D., F.R.S. ACTING DIRECTOR
1903

(1) Drift lignite occurs on Mica creek.
(2) Chlorite and sericite schists, with some gneiss. These rocks resemble the Klondike series, they occur along valley east to Kalzas river.
(3) MacMillan mountains built mostly of light and dark quartz schists, argillites and crystalline limestones. Small areas of granite and andesite also occur.
(4) Band of crystalline limestone containing abundant crinoid remains
(5) Green rock, altered in places into a chlorite schist.
(6) Dark and grey argillite with quartzite bands and limestones.
(7) Hard shales, slates and tuffs, alternating in places with beds of chert.
(8) Wide band of tuffs, quartzites, grits, and red, green and grey striped schists. Band of dark cherts crosses Plateau mountain south of summit.
(9) Coarse gold occurs on Russell creek.
(10) The red schist series is followed on the North fork by dark and grey argillaceous rocks altered in places into slates and schists, alternating with beds and bands of dark cherts. Some limestones and quartzites are also present.
(11) The cherts and argillaceous beds are succeeded in the upper part of Cache creek by chert breccias and shales.
(12) Cherts and argillites similar to those found on the North fork.
(13) Chert breccias, shales and sandstones.
(14) Soft dark shales apparently overlying chert breccias, etc.

C.O. Senécal, B.A.Sc., Geographer and Chief Draughtsman.

Scale, 8 statute miles to 1 inch = 506,880.

10 0 10 20 30

MAP

of a portion of the

YUKON TERRITORY

Shewing explorations on

MacMillan, Pelly and Stewart Rivers

to illustrate report of
R.G.McCONNELL, B.A.
1902

Geological Survey of Canada
ROBERT BELL M.D., Sc.D., LL.D., F.R.S. ACTING DIRECTOR
1903

134°30'
134°
133°30'
133°
132°30'
132°
131°30'
131°
63°30'
63°
62°30'
South Branch of Stewart River
Canyon Creek
Canoe Creek
Moose Lake
Moose River
MACMILLAN RIVER
Plateau Mt
5980
Granite.
RUSSELL MOUNTAINS
Morton Creek
Gillies Hydraulic Concession
George Cr.
Limestone Creek
Russell Creek
North Fork of Russell Creek
North Fork
Dor Creek
Husky Dog Lk.
Cache Creek
Cheechoo Creek
Granite.
Andesite
SOUTH FORK MOUNTAINS
Lee Creek
Canyon
Riddell River
SELWYN RANGE
Lone Mt
3733
Dromedary Mt
3535
Barrier River
Ogilvie River
OGILVIE MOUNTAINS
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To accompany Part A Vol. XV.

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SOURCES OF INFORMATION

Pelly and MacMillan rivers from Fort Selkirk to MacMillan forks and to Riddell river on South fork, from Micrometer Survey by J.Keele, 1901.

North fork MacMillan river and Riddell river from track surveys by R.G.McConnell and J.Keele, 1901.

Stewart river and topography north of Selkirk from survey by J.J.McArthur Department of the Interior 1898.

The other features adopted from the published maps of the Geological Survey, 1887-88.

Heights in feet above sea level
Compilation by J.Keele, B.A.Sc.

Beds of gravel, evidently deposited by running water, fine silts which have slowly settled down in still water, and glacial boulder clays often alternate several times in the same section.

Boulder clay occurs in disconnected patches all along the Macmillan valley, and down the Pelly for some distance below the junction of the two streams. The heaviest and most continuous deposits of this material noticed occurs on the Pelly river above Mica creek, near the western limit of the glaciated area. Sections at the cut banks along this portion of the river show a bed of typical boulder clay, filled with glaciated boulders, forty feet in thickness. Thick bed of boulder clay.

The upper surface of the boulder clay bed is level and is covered with rolled gravel alternating in places with sand. A layer of large boulders occasionally occurs at the bottom of the gravels.

Besides the main boulder clay bed at the base of the glacial deposits, several smaller beds alternating with silts, sands and gravels are exposed higher up in the face of a steep terrace which follows the river on the north. The section is concealed in places and a complete record could not be obtained. Granite boulders foreign to the locality occur on the hill sides at this point up to a height of 850 feet above the river.

The boulder clay is underlaid in some places by a bed of rolled gravels, but frequently rests directly on the bed rock. It is overlaid as a rule by silts, sands and gravels, inclosing occasional beds of boulder clay. These deposits are exceedingly irregular and their sequence varies in every section examined. The thin silt beds are often folded around irregular patches of coarse gravel of from three to six feet in thickness and in places are sharply flexed and even overthrown. Silt beds peculiarly folded.

The reason for this singular attitude of the silt beds is not clearly understood, as the movement which produced them, if it were movement, did not affect the associated coarse sands and gravels.

It is possible that the folding in some instances was caused by the pressure of ice descending the valley and dragging over the beds, but this explanation does not appear to be of general application. In some cases the appearance of the beds suggested the deposition of the silt beds in quiet water around masses of gravel brought down into the valley by torrential side streams. The peculiar folded character of the silt beds overlying the boulder clay in the Macmillan valley was also noticed in previous explorations on the Teslin, the Lewes and the Stewart.

The boulder clay in the lower part of the Macmillan valley is overlaid by an important clay bed at least 200 feet in thickness. The clay Important clay bed.

is bluish in colour, is indistinctly bedded and is very plastic, rendering it peculiarly liable to slides. The clay is very pure as a rule, but in places appears to pass upwards into a silt. It is overlaid by sands and gravels. The clay bed was traced from the mouth of the Macmillan up the valley for sixty miles, but is not found on the Pelly below the mouth of the Macmillan.

It was evidently deposited in a long narrow lake of considerable depth, probably held in by an ice dam at the mouth of the Macmillan.

The lower slopes of the mountains where it occurs are faintly terraced up to a height of at least 1,500 feet.

The alternating and irregular beds of silts, sands, gravel and boulder clay which form the upper part of the glacial deposits along the Macmillan valley evidence a period of rapid and complex changes, as quiet water, swiftly running streams and ice, are all necessary to explain them. The surface of the narrow valley plain built up by these deposits is always more or less pitted, and in places is formed of a complicated series of interlacing ridges, some of them evidently of moranic origin inclosing pits and basins often fifty feet or more in depth. A section of one of those ridges showed it to consist mainly of coarsely stratified sands and gravels with some soft boulder clay.

The sand and gravel beds possessed a rough anticlinal attitude, corresponding in a general way with the outline of the ridge, but much flatter.

Drift deposits variable in thickness.

The thickness of the drift deposits along the Macmillan is variable but usually measures from 400 to 500 feet. Kalzas river, one of the main tributaries is lined with conspicuous terraces up to a height of 900 feet.

Lakes are common throughout the glaciated district. A number of small lakes occupying shallow rock basins occur in the granite ranges of the Selwyn mountains, and the pits and hollows inclosed by the morainic ridges are often partially filled with water.

The larger lakes like Moose lake and Kalzas lake occupy long depressions in the glacial plains, probably produced in some cases at least by the thawing out of masses of ice left behind on the retreat of the main glacier.

Another class of lakes common in all the valleys simply represents abandoned portions of old river channels.

ECONOMIC GEOLOGY.

Macmillan river not gold producing.

The Macmillan river has not so far produced any gold, although it has been more or less prospected along its whole course. Fine colours are present everywhere, but no pay bars, such as have been worked on the Stewart, Pelly and other tributaries of the Yukon, have been discovered. The old quartz-bearing schist and gneiss which contribute the gold to these streams are replaced in the valley of the Macmillan by younger formations, none of which have proved to be notably auriferous.

The most promising formations for minerals of economic value are the quartz schists and accompanying chlorite, and sericite schists near the mouth of the river and the wide band of red, green and dark schists and associated rocks which crosses the valley in a diagonal direction at the Forks and extends up and down the river for a considerable distance. Both these formations are cut by occasional quartz veins and silicified zones, but the few specimens collected proved on analysis to be barren. Argillites heavily impregnated with pyrite occur in Lone mountain and also in Dromedary mountain. Specimens were analysed but yielded nothing of value.

Gold reported on Russell creek.

The only tributary of the Macmillan on which coarse gold has been definitely reported is Russell creek. This stream enters the Macmillan from the north, four miles below the Forks, and cuts through the red schist series referred to above along its whole course. A mining concession embracing the larger part of the main valley has been granted to a company, but no work was in progress during the past season and no definite information in regard to values was obtainable. Some prospecting was done above and below the concession during the season, the results of which were not considered favourable, although fine colours and an occasional coarse colour were obtained.

Favourable conditions for working.

Russell creek occupies a wide heavily glaciated valley, floored especially in the lower part with heavy deposits of silts, sands and gravels mostly of glacial origin. This drift material thins out gradually ascending the valley, and near the summit the bare rocky floor of the old valley bottom is often uncovered. The present stream occupies a narrow depression sunk through the drift deposits down into the bed rock beneath. The grade of the stream is heavy, averaging 100 feet to the mile, the flow of water in the main stream and also in some of the steep tributaries is ample for hydraulicing at all seasons and the conditions are generally favourable for cheap working. The prospecting done up to the present time has proved the presence of coarse gold in the creek, but has done little more. The extent of the auriferous gravels and their average tenor still remains to be determined.

Boring necessary to prove existence of lignite beds.

A small seam of carbonaceous shale or impure lignite, of no value, occurs at Granite canyon on the Pelly, and drift lignite, as stated on a previous page, was found on Mica creek. It is highly probable that lignite-bearing beds underlie the comparatively low country along Mica creek, but, as no surface exposures were seen, definite information on this point can only be obtained by boring.

A shaft sunk on an easterly branch of Mica creek, about eight miles from the Pelly, is reported to have passed through several small seams of lignite.

The Climate and Flora of the Yukon District.

Professor John Macoun.

Work done by botanical branch.

During the past year, the routine work of my office has continued to increase and much of my time has been employed in determining specimens and replying to queries from working naturalists throughout the Dominion. During the winter and early spring months, the proofs of Part VII. of the Catalogue of Canadian Plants were read and revised and this report was printed before my departure for the field in June.

I am now completing the manuscript of the second part of my Catalogue of Canadian Birds, which will be printed this winter. In conjunction with Dr. Theodor Holm and James M. Macoun a flora of the Hudson Bay region has been written, which will be published next autumn. In the office work I have been assisted by Mr. James M. Macoun and Miss Stewart. The time of the former has been chiefly employed in determining specimens, while Miss Stewart has been engaged in writing labels and filing letters.

Specimens sent for determination.

A record has been kept of the number of specimens sent for determination to my assistant or myself, and, without including the collections brought in by members of the Geological Survey staff, these number 1,644 sheets of specimens. The largest of these collections were from Anticosti (375 specimens) and St. Laurent college (314 specimens), while smaller lots were received from all parts of the Dominion. My own collections, made in the Yukon, number many specimens, many of the species being new to science. These are as yet undescribed. Mr. James M. Macoun brought from southern British Columbia a very large collection of plants, birds and mammals upon which he is now working.

Since the last summary report was published 3,226 sheets of specimens have been mounted and placed in our herbarium.

Of these 1,858 were Canadian flowering plants, 927 were foreign and 441 were cryptogams; 3,461 specimens were distributed from the herbarium, chiefly in exchange for specimens received in previous years. One hundred specimens were purchased and 832 were received from foreign correspondents.

Miss Stewart, our clerical assistant, has during the year spent a portion of her time assisting the librarian. In addition to her work before referred to she has completed the numbering of the herbarium sheets of flowering plants, of which we have 57,961; of these 34,289 are Canadian.

Examination of Klondike country.

Reports on the character of the country and the climate in the vicinity of Dawson, Yukon district, differed so much from one another and were so contradictory that I was instructed to make an examination of the Klondike district during the summer. I made the necessary preparations and left Ottawa on June 27. On my arrival in Vancouver, I waited two days for a boat, and on the morning of July 5, left for Skagway on the steamer *Amur*. At 10 p.m. on the 7th I reached Skagway and left the next morning for White Horse, reaching there at 4.30 p.m. At 8 p.m. the same evening I took the boat for Dawson and reached that city at 8 a.m. on the morning of the 10th.

Work in the vicinity of Dawson.

Work was commenced the same day and I collected specimens and made notes in the vicinity of Dawson until July 21, when I went up Hunker creek and examined the country for miles around. I remained there until August 3 when I returned to Dawson. After a few days I took the stage to Gold Run creek, a distance of forty-eight miles. The road passes up Bonanza creek and over the Klondike—Indian divide, and then down Gold Run creek to Dominion creek. This trip enabled me to see a large section of the country and assisted me very much in my final opinions regarding it.

By the last week in August I saw my work for the season accomplished and started on my return to Ottawa on August 25. On my way up the river I purposed stopping at Fort Selkirk, but, owing to a severe cold, I was forced to push on to White Horse which I reached on the 29th. Four days were spent at White Horse and then I proceeded to Skagway and finally reached Ottawa on September 15.

The day has passed when the trip to Dawson means either difficulty or danger above the ordinary, but the element of time is still considerable. If close connections were made, the trip to Dawson would require only ten days and the return trip thirteen days.

Description of the route from the White Pass to Dawson.

Cross White Pass.

We crossed the summit of the White Pass at an altitude of 2,952 feet and began to descend at once to the north. Here we were above the tree line, and bare mountain slopes, broken rocks, pools of water and a truly arctic or high mountain vegetation showed the climate to be cold, while the stunted and broken trees lower down indicated the immense snowfall which is characteristic of the whole coast range.

As we descended towards Lake Bennett the vegetation rapidly changed and stunted firs (*Abies amabilis*) gave place to small spruce trees and the high mountain shrubs and herbaceous plants began to be replaced by forest species. Little time was available for making collections, but the species collected were those found at an altitude of 6,000 feet in the Selkirk mountains. At the head of Lake Bennett, where we had lunch at 2,170 feet altitude, an agreeable change was noticeable and the vegetation had much improved. The mountain summits, however, showed that we were not far below a chilly atmosphere.

Railway follows east side of Lake Bennett.

The railway keeps to the right or east side of Lake Bennett and a very little below Bennett station takes a slight turn to the east. The cold winds from both the Chilcat and Chilcoot passes seem to be cut off and a most astonishing change takes place in the vegetation. Our train reached the point where the trains cross, some time ahead of the train from the west, and quite a collection of plants was made and numerous species indicating a mild climate were obtained. Amongst them a species of rose (*Rosa acicularis*) was found in bud. Two days later the same species was gathered, with fruit half grown, at Dawson four degrees farther north.

Fine climate at Caribou Crossing.

At Caribou Crossing, 24 miles from Bennett, without descending one foot, the whole vegetation had changed and everything indicated a genial climate. Since then I have learned that next year farming on an extensive scale is to be inaugurated at this point. It is true that the soil is light sandy loam at the crossing, but it is said to be better eastward along the lake.

Gardening successful.

The general character of the valleys from Caribou Crossing to White Horse varies little, but there is a gradual change of climate as indicated by the vegetation. There is evidently less rainfall and, outside of the river valley, more sand. Although I reached White Horse in Lat. 60° on the 8th July, I found the wild flowers past their prime and asters and golden rods, that would not flower in Ontario until August, were beginning to ripen. This was a new town a year since, yet attention has already been given to gardening by the steamboat owners.

Although White Horse is very far south of Dawson, its climate is far from being as good as that of Dawson, but the past summer all who have tried have been successful in bringing vegetables to maturity. When there in September, arrangements were being made for more extensive cultivation next year.

Nature of forests.

The character of the forest along the Yukon varies according to locality. The trees vary greatly in size and in no case can the forest be called heavy. There are many groves in the river valley where the trees are tall and stand pretty close together. These are the exception, however. In general the trees are under a foot in diameter but many run to 20 inches. On the slopes near the river they are generally small and not so tall as in the river valley.

Back from the river occasional glimpses were obtained of wooded slopes which seemed to have a covering of fair sized trees. As no stoppages were made except to take on wood, there was no chance to see anything except from the deck of the steamer. The forests along the Yukon cannot be compared with those of any other region because they exist under different conditions. The Yukon flows from south to north with a tendency to the west. This gives almost constant sunshine on the east or right bank of the river and hence many of the cliffs and mountain slopes are covered with grass. Often for miles only scattered trees can be seen on this side of the river. On the left bank everything is changed. Here the steep slopes have small trees but where the slopes are less abrupt and more exposed to the sun the trees stand closer together and are apparently much larger. This may be said to be the general character of the river banks all the way from White Horse to Dawson.

Prevailing trees.

At White Horse the forest outside the river valley is composed of lodge-pole pine (*Pinus Murrayana*), but in the valley from there to Dawson black and white spruce are the prevailing trees. White spruce is the chief wood used on steamboats, and indeed for every purpose except as firewood at the mines, where black spruce and birch (*Betula resinifera*) are largely used. Aspen poplar and balsam poplar are common throughout the country. The latter with willows constitutes the woody vegetation of all but the very oldest islands in the Yukon. On the latter large white spruce trees are often seen standing up straight and tall. The forest in the immediate valley of the Yukon will soon disappear, as many thousand cords are used every year by the steamboats, and rafts are floated to Dawson to be cut up for firewood.

On my arrival at Dawson on July 10, I took notes of the condition of vegetation at that time, and was struck with the advance already made by the native plants and shrubs. Garden strawberries were that day placed on the market at $2.50 per box.

Situation of Dawson.

The first thing that strikes a traveller when he reaches Dawson is its situation. It takes up the whole of a swamp which extends from the mouth of the Klondike to where Moosehide mountain impinges on the Yukon, a mile below. The city is on the right or east bank of the Yukon, which here is about as wide as the Ottawa at the capital, with a current of four or five miles an hour. The city crosses the swamp, and many cabins are built on the mountain side for over 500 feet up its slope.

Drains have been dug along all the streets and surface drains about two feet deep on many of the unoccupied lots. Gradually the frost is passing out of the ground, as many of the houses show that the ground is settling. Attempts have been made in numerous places to make lawns, and although in most cases very little work has been done, timothy has taken well and the lawns of the Presbyterian church and the hospital are growing rapidly, and, after being cut, spring up quickly.

Rapid growth of vegetation due to long summer days.

On Sunday, July 13, nasturtiums and sweet peas were in flower and on the next day an eastern rose bloomed in the garden of Dr. Brown the Territorial Secretary. Owing to the long days of late May and all June, vegetation grows very rapidly, and I was surprised on my first trip up the mountain on the 11th July to see that, even then, most of the flowers had perfected their seeds, though many were still blooming profusely. Roses were long past flowering and their hips were colouring. At about the same altitude, only four days before, I found the same species of rose coming into bloom on the shore of Lake Bennett, over four degrees or 300 miles farther south. The species was *Rosa acicularis*, and Mr. James W. Tyrrell showed me specimens he had gathered in flower on June 2. Last spring Dr. Guillet of Ottawa and myself had been noting the flowering of all species at Ottawa, and this species was first detected in flower in Queen's park, Aylmer, Que., nine miles from Ottawa, on June 3. This one simple fact shows the progress of the spring at Dawson better than a whole series of elaborate statistics, because statistics do not give the amount of heat and light given out in a 20-22 hours day,

On the 12th I collected plants on the mountain and gathered red currants (*Ribes rubrum*), blueberries (*Vaccinium uliginosum*) and mountain bearberries (*Arctostaphylos alpina*) in profusion, fully ripe. Hosts of other plants were in seed and *Anemone parviflora* was blooming the second time. The fruit of the 'prairie crocus' (*Anemone Nuttalliana*) had all fallen and the leaves turned to dust. Every native plant seemed to have almost completed its summer's work at this time. I could find no plants that indicated coldness, so on the

14th I ascended Moosehide mountain immediately in rear of Dawson to see if there were any on it.

Ascend Moosehide mountain.

Dawson is 1,200 feet above the sea and Moosehide mountain rises 2,050 feet above city. The mountain as seen from Dawson throws out two long ridges, one towards the Klondike, the other towards the Yukon below Dawson. Both ridges end in steep cliffs facing the above rivers. Paths from many points in Dawson lead to the summit of the Klondike ridge and from there other paths lead to the summit.

On Monday, July 14, I made my first ascent of the mountain and particularly noted the vegetation. There were many fine species on the lower slope either in flower or seed and intermixed with these were grasses of the genera *Arctagrostis*, *Poa*, *Festuca*, *Calamagrostis*, and *Trisetum* and *Agrostis* were represented by a single species each. Later I found that these were the commoner grasses of the country.

Vegetation noted.

An umbelliferous plant discovered by Dr. G. M. Dawson in 1887 and named in his honour grew from base to summit. The plant in question is *Selinum Dawsoni*. The Carices were altogether eastern and ascended to 3,000 feet on the slope. Pale corydalis (*Corydalis glauca*) was abundant on burnt land and the western form of *Corydalis aurea* was occasionally seen. The great willow herb (*Epilobium spicatum*) was in profusion everywhere and indeed is the common fire weed of the Yukon as it is in British Columbia and the east.

Forest trees.

Aspen poplar (*Populus tremuloides*) was abundant, white spruce (*Picea alba*) covered all the dry slopes, and the black spruce (*Picea nigra*) was everywhere else, including all swamps and slopes facing north at any altitude. After climbing about 1,000 feet above Dawson, an alder (*Alnus fruticosa*) taking a tree form was not uncommon. Another common tree was a birch (*Betula resinifera*) which averages about six inches in diameter and is much used in Dawson for firewood.

As I ascended higher, many other species of plants came in, but a species of Polemonium occupied more ground than all the others put together. Another prominent and beautiful species was a golden-rod (*Solidago oreophila*) which is characteristic of the Yukon and extends to White Horse. At about 2,000 feet altitude, the flora changes and *Saxifraga tricuspidata* and *reflexa*, *Arenaria lancifolia* and other species make their appearance. About 500 feet higher up, the same species were found in seed and everything else indicated more warmth than was evidenced by the development of the vegetation lower down. Speaking of this fact later in the summer and deducing from it that the air was constantly warmer 1,000 feet above Dawson in the summer than in the city, I was informed that this was specially true in the winter as it was a common occurrence for parties to go up the

Evidence of higher temperature 1,000 feet above Dawson.

mountain in winter to get warm. These statements taken together will be referred to again in this report.

Plants found on extreme summit of Moosehide Mountain.

On the extreme summit *Potentilla nivea* was in seed and around were *Cetraria nivalis* and *cuculata* and rock lichens that are found at Banff in the Rocky Mountains. Coming down I collected a fine aconite (*Aconitum delphinifolium*) and a larkspur (*Delphinium glaucum*)and noted many species not hitherto seen. A large perennial species of Polygonum, looking much like buckwheat, grew in many places and was quite showy with its tall branching stem (about five feet high) and its long racemes of white flowers.

A very extensive view to the east is obtained from the mountain summit, and I was extremely surprised that the Ogilvie mountains which lay, beyond a wide plain, about 40 miles off, were altogether without snow except small patches lying in deep hollows. Although their summits were at least 8,000 feet above the sea, they were entirely bare. This panorama of mountain and plain without a sign of cold in lat. 64° 15', set my mind to work to find out why this could be, and I have solved the riddle to my satisfaction in my paragraph on climate.

The 15th was spent in the Klondike valley and here also new revelations awaited me. The islands in the river have been cleared of brush and trees and in their stead gardens have been established in which vegetables of all kinds come to perfection. From these gardens the citizens of Dawson are supplied with rhubarb, radishes, lettuce, onions, turnips, beans, parsnips, carrots, peas, cabbage, cauliflower, Scotch kale and many other pot-herbs. Everything was in an advanced stage and gave certain promise of a large crop.

Vegetables grown successfully.

All the above vegetables have passed the experimental stage and nothing is necessary to success but care in the cultivation. Collections were made in the valley and many interesting plants were obtained which will be brought out with more prominence in another report.

Next day, July 16th, I crossed the Yukon by the ferry and visited the gardens and farm in West Dawson. The gardens are on the flat along the Yukon, and seem to have been established before any others in the district. Everything was in a forward state for the season. Munro's farm is on a hill about 300 feet above the river and about a mile west of the gardens by the river. Here was actual farming, and, besides the usual garden vegetables, there were at least 25 acres of oats which had been sown for fodder. To the north of the oat fields 25 acres were cleared and were being broken up for a summer-fallow.

Visits paid to Munro's farm.

On August 6 I again visited this farm and found a marked change in the growth of the oats. Some of the seed had been sown late and some early, but the greater part late and on freshly broken ground. As a result of this the crop was patchy and tall and short grain grew in close proximity. The land ploughed the year before produced the earliest and best growth of straw. Nearly all the grain was in the milk, but where there evidently had been a crop last year I pulled up specimens of wheat, barley and oats that were far advanced towards maturity. Fine specimens of oats were gathered that were colouring and had very remarkable grain. Instead of one full grain and an abortive one in the fascicle there were always two and often three. This condition I had never seen before, but it seems to be universal at Dawson, as later I noticed it in other fields.

Barley ripe in 79 days.

On August 23rd I again visited Munro's farm in West Dawson. He was then cutting his oats for fodder. In his latest oats the volunteer barley was all ripe and this was not sowed until June 5th. In this case the barley ripened in 79 days. Tables in my possession show that there is no frost from May 23 to August 23, or 91 days.

After collecting and making notes around Dawson until July 22nd, I removed to Hunker creek near Gold Bottom creek. From this as a centre I examined the country for several miles around, and learned many things that I had not clearly understood before. Many opinions are expressed regarding the deposition of gold, the depth of the frost in the ground, the occurrence of fossil bones in the gravel and other matters that it is not my province to discuss in this place.

Earlier reports misleading.

The earlier reports led me to think that the whole country was covered with a thick coating of moss, and that beneath there was permanent frost. Other reports were that there was no wood of any account in the country and scarcely any at Dawson. All these statements were partly true but so far from the whole truth that they were virtually untruths. During the two weeks I spent on the creeks I made a special study of the prevailing conditions and am able to give a clearer view of the situation than I had when I went there.

Conditions very varied.

Owing to the high latitude of Dawson, 64 15′ north, the altitude of the sun above the horizon is never very great. For nearly three months, however, there is scarcely any darkness and the sun is above the horizon over three-fourths of the time. The rainfall and snowfall are both light. This light deposition combined with so much sunshine gives much warmth, and on exposed soil great evaporation. These conditions are so varied that while on one side of a creek there may be two or

more feet of moss and beneath that permanent frost, on the other side the soil may be so exposed to the sun that no moss can exist and only the deepest rooting grasses can maintain a foothold. Hence, people talking about deep mosses speak of land facing the north, while those who claim irrigation is necessary have in their minds trenches exposed to the sun. This being the case any one writing on the subject of vegetable growth or the production of crops must take all the circumstances into consideration.

It must be borne in mind that in the vicinity of the Yukon and its tributary streams there is no level land except in the immediate valleys of the rivers, and these are largely swamps. All the mountains are dome-shaped and the ridges that connect them are narrow with sloping sides. The hills are small replica of the mountains, and the sides of all the creek valleys are sloping and not a precipice is to be seen in the country except along the Yukon or Klondike.

Coating of moss causes permanent frost in ground.

In nearly all cases the lower slopes of the creeks, especially close to the water, are covered with a deep coating of moss, and the valley itself a peat bog chiefly *Sphagnum*. The cause of this is not far to seek. Much of the surface is more or less covered with gravel and the melting snow and rain sink into the soil until the frost is reached when it either changes to ice or runs on the surface of the frozen ground down the slope and oozes out at the base as a series of 'springs,' the thickness of the moss covering generally determining the extent of the summer thaw. Where real springs ooze out in the valleys or on the slopes, the water freezes into what the miners call 'glaciers,' but these are just the water of the springs turned to ice. This condition has a tendency to increase the depth of the frost as an ice sheet under the moss acts like an ice blanket and keeps out the heat. With these facts in mind any person can see that the cutting down of the forest and the drying up or burning of the moss will completely change the conditions, and permanent frost will not be a noticeable factor in the climate of the Yukon.

Timber small in valleys and lower slopes.

By the above it will be seen that in the creek valleys and on the lower slopes the timber must be very small, which is the case. As we ascend the slope, the trees get larger and taller and at an altitude of nearly 2,000 feet above Dawson the forest assumes the appearance of an eastern one, and trees can be found 20 inches in diameter, with trunks nearly a foot in diameter from 50 to 70 feet from the stump. Trees of this character were found at the head of Gold Run creek and its tributaries. It must not be understood that the forests on the Yukon in the vicinity of Dawson are in any sense like those in eastern Canada. The trees are seldom close together, are generally under 50 feet in height, and it is only under exceptional conditions

that they attain the size mentioned on the preceding page. Much of the timber consists of poles ranging from four to eight inches, the latter size being in the minority. The wood on Hunker creek was of this character and seldom produced two sixteen-foot sticks, into which lengths all cordwood is cut. Before I left Dawson thousands of cords of spruce in sixteen-foot lengths were floated down the Klondike for use at Dawson. These sticks ranged from four inches to a foot or more in diameter, were clean and well grown, and split as straight as a shingle.

Forest represented by eleven species.

The forest in the district visited consisted of eleven species which attain the dimensions of trees but of all these only the white spruce *(Picea alba)* and balsam poplar *(Populus balsamifera)* grew to a considerable size. Black spruce *(Picea nigra)* was abundant in all peat bogs and on the lower slopes of the hills but never became large. Mixed with the black and white spruce were three species of birch, two of which were mere poles, but the third, *(Betula resinifera)*, was sometimes eight inches in diameter and supplied most of the firewood consumed around the mines. It was never tall, seldom having a trunk that produced two sixteen-foot lengths for firewood. Three willows and two alders became little trees but were of no use for firewood. Aspen poplar *(Populus tremuloides)* as usual occupied the dry slopes and was mixed almost everywhere with white spruce but was always of small size.

In the Klondike valley about four miles from Dawson, near the mouth of Bear creek, there were a few groves of tall, straight, well-grown balsam poplar and white spruce. These as remnants of an earlier forest showed that the climate was well suited for forest growth, and that the short warm summer with continuous growth gave shapely trees and rapid increase in size.

Soils evidently good.

Attention was given to so many things that in a summary report all can scarcely be enumerated, much less dwelt upon. From what I saw of growing crops I am satisfied that the soils are good. That in the river bottoms was alluvium, overlying the river gravels. On the hills the soils seemed to be chiefly loams, with sometimes sand in greater or less proportion. As no glacier action had taken place the soils were very local in character and largely resulted from the disintegration of the rocks of the locality.

Cultivation will result in earlier ripening of crops.

All attempts at cultivation were apparently successful even in the Dawson swamp. When the ground is properly worked, the soil mixed, and the ice or frost stratum in late summer is found at a depth of eight or ten feet, there will be a complete revolution and all crops will mature much earlier. I took notes, during the seven weeks I was at Dawson, of the growth of all cultivated grains and vegetables, and

below will be found my remarks written at the time. Everything, be it native or exotic, grew surprisingly, and while I never found any cultivated thing a failure, I must say the same of weeds. In every case they were a success and numbers of them were natives of California.

White clover, alsine and red clover as well as timothy grew wonderfully well by roadsides and on dry soil. In the swamp muck of Dawson, much of the clover on lawns, sowed in the swampy soil, looked yellow and had a sickly appearance. Timothy acts similarly; when sowed in the bog it is sickly and yellow-looking, while along dry roads in the woods or on the hillsides it is quite tall and has a seed-head from two to three inches in length.

Yukon district well suited for growing barley.

Barley is certainly well suited to the Yukon district. On August 6th, on the farm at West Dawson, I found grain quite hard mixed with oats that were much later in appearance. On the 18th August, I visited the gardens in West Dawson along the Yukon and found oats being cut for fodder. Mixed with the oats were many barley heads fully ripe and others that had hard grain. In all cases the grain was large. West Dawson was again visited on 23rd August and Munro was then cutting his oats for fodder. In his latest oats the volunteer barley was all ripe and this was not sowed until June 5 so that the ripening of barley at Dawson is an assured fact.

Oats do well everywhere but are seldom even a fair crop on ground just broken up and then seeded. In all cases I found good oats where sown on second year cultivation. The grain was earlier, taller and better in every way. On August 6th I found self-sown oats on Munro's farm in West Dawson fit to cut, but only a few bunches on dry ground. Barley was ripe at the same time under the same conditions. This showed me that up to that date there had been enough heat to ripen oats and barley if sown early on dry soil. Mr. Munro seemed to realize this for on August 23 he showed me 21 acres about ready for a crop, that he had already ploughed three times and intended to sow at the earliest possible moment in the spring of 1903. One man of this type will do much for the Yukon, yet hitherto cultivation of the land on a large scale has been almost prohibited by the local authorities, and, up to the time I left, farming was almost illegal as the gold seekers had blanketted the whole country.

Farming not in favour.

On my last visit to Munro's farm I advised him to lay his case before the Deputy Minister and, if he did, I am sure that farming in the Yukon will be no longer under disadvantages. There is no reason why all the oats, barley and fodder of all kinds with every vegetable

required in the home should not be grown around Dawson. That this is not so is the fault of local or other laws that give no surface rights to the individual outside of mining rights. Amending the land laws and giving proper encouragement to farming operations will soon place the Yukon district on a basis where it will be self-supporting outside of wheat requirements.

Wheat growing at present uncertain.

In the matter of wheat, I do not speak positively, but I believe that after a few years wheat will ripen on all fairly warm soils, although at present its ripening is doubtful. As far as my investigation went I could find no person who had sown wheat. Mr. Munro had sowed oats grown somewhere in the United States, and he informed me that he was led to believe that the wheat mixed with it was spring wheat. Instead it nearly all turned out to be fall wheat and only made leaves, stooled out and its roots penetrated the soil to a remarkable depth and so remained when I saw it on August 23. That it will ripen next summer is to me a certainty, and I trust Mr. Munro has not ploughed it all under. Of the spring wheat I may say it was generally taller than the oats but scarcely as ripe. All the ears were filled to the tip with grain, and the grain was filled out and since has hardened so as to give the appearance of ripe grain. Since my return to Ottawa I have had the grain tested, and the report on the Yukon wheat received from the grain tester Mr. Ellis of the Experimental Farm, is as follows: 100 grains planted; 100 grains germinated: 100 grains made vigorous growth. Germinations very quick and growth exceptionally good.

When grain ripens in the country and is again sowed there, it will take on the conditions of its environment and mature earlier, and early frosts, like those formerly attributed to Manitoba, will have no effect as the crop will mature before they come. I may remark here that the wheat in the North-west ripens earlier now than it did twenty years ago and many people believe it is the climate that has changed whereas it is only the wheat that has adapted itself to its environment.

Potatoes not so far grown to advantage.

Hitherto potatoes have not been up to the standard as regards dryness and general fitness for the table. After making full inquiry into the subject I became convinced that the seed potatoes came from too far south. Acting on this thought, I had a few pounds of early potatoes sent out to Mr. J. B. Tyrrell with instructions to give them to any parties who would give them a fair chance. I have no doubt of their success. I may say here that Mr. Tyrrell did all he could to make my work a success and in many ways helped me by advice and assistance.

Growth of vegetables is so rapid and vigorous that to a person coming from the east it is simply astounding. When I reached Dawson

on July 10, early cabbages were being cut and on August 5 their weight ranged from 3 to 5 lbs. On the 22nd, when I made my last visit, hundreds of matured cabbages and cauliflowers had been cut and sold. I measured the two lower leaves of a cabbage cut the day before and the two placed opposite each other had an expansion of 3 feet 9 inches with a breadth of 16 inches. I cannot call this even an average one as there were hundreds larger but later in maturing. Cauliflowers were from six to ten inches in diameter but I was told larger ones had been cut.

No doubt the constant daylight gives the force necessary to expand the vegetative organs of the vegetables in cultivation, but behind the long day are climatic conditions that as yet are little understood which in my opinion are the prevailing factor in this wonderful growth. Dr. Dawson in his geological report on this district indicated that there was little if any boulder clay on the Lower Pelly or Lewes rivers. Since then other reports have more than confirmed his statements, and my own observations tending that way have forced me to adopt new views regarding the past and present of the country.

Cause of glaciers.

One article of an eastern geologist's belief is that of an ice cap that covered the greater part of the American continent down to the 40th parallel. At Dawson in latitude 64° 15' and both north and south of it on the highest mountains there never has been glacier ice, yet the winter at present continues from early October to late April. Glaciers, no matter where they are found are produced from one cause, which is greater deposition of snow than the sun has power to melt. As there is no evidence that glaciers have ever existed in this region, it follows that the snowfall has never been great. Mr. Stupart has kindly furnished me with an abstract of meteorological observations during the past three years and I find that there is an average of only nine inches of rain and sixty-five of snow each year. The cause of this light deposition was the next climatological factor and a study of the map of the Pacific coast revealed the undoubted cause.

Any one sailing from Vancouver to Skagway is soon aware after leaving Vancouver island, that there is a marked change taking place in the climate. After crossing Queen Charlotte sound, fog and rain are the prevailing characteristics in the summer, while in the winter they are snow, rain and fog. On the mountains over 5,000 feet, the deposition is chiefly snow. The snowfall being greater than the sun can melt descends toward the sea in valleys often filling them to a great depth and taking the form of glaciers which descend to the sea. Passing north of Sitka, the tourist soon sees the immense glaciers that descend from the Mount St. Elias range. Here Mount Fairweather, 15,287 feet high, Mount Logan, 19,539 feet, and Mount St. Elias, 17,978 feet high

stand in plain sight from the sea and the observer turns away with the certainty that a country whose sea border is nothing but ice and snow can be of little value so far north. Up to a very late date the whole Yukon valley has been considered of this character and the early explorers with their highly coloured accounts of their winter experiences tended to confirm it.

Effect of coast range on climate.

Instead of the coast range being an injury to the interior, it makes the climate pleasant both in summer and winter. The Yukon district has two climates, a wet and cold one on the coast which may be called the Alaskan climate as nearly all the coast region belongs to the United States. The climate of the Yukon district in Canada is just the reverse, being dry and warm in summer and cold in winter with a light snowfall. Owing to the moisture rising from the warm Japanese current being carried inland by the upper south-west air current and striking the coast range this moisture is at once precipitated on the sea face of these mountains in the form of rain or snow and the air freed from its moisture descends on the Yukon plain as dry air and having an increased temperature. It follows that the rainfall must be light in summer and the snowfall in winter. In another place I show that this is so from Mr. Stupart's report.

Light snow fall causes early spring.

The result of the light snowfall is an early spring in the whole Yukon valley including part of Alaska. Then the long day begins to assert itself and by the end of April, growth has commenced, and early in May the Yukon summer is fairly under way. So little rain falls in early spring that many residents asserted that irrigation was necessary to successful growth in certain localities. I do not believe in the necessity of this as the frost in the ground prevents the melted snow from penetrating the soil and keeps it near the surface. I can believe, however, in the necessity of irrigation if the gardener or farmer has waited a month after the snow is gone before sowing his seed. I have always recommended early sowing in northern regions, as growth always comes quickly after the snow has disappeared. The past season I saw oats that were sowed on June 5, that could have been sowed a month earlier if the climate had been considered. All these matters will right themselves in time but the climate must not be blamed for the ignorance of the cultivator.

Frost in ground beneficial.

Instead of the frost being an injury to the country it is a great benefit. A rainfall of twelve inches (snow and rain) means an arid climate and hence little growth. The severe frost being permanent or otherwise retains the moisture and from early spring to late summer the capillary attraction in the soil keeps the roots supplied with moisture and the constant daylight with an unclouded sun gives a vigour to vegetable

growth at Dawson that is never seen in the east. This constant growth brings all vegetables, berries and cereals to early perfection. It was with the utmost surprise that I found red currants and blueberries fully ripe on July 11 and many flowers with ripe seeds, and by the middle of August the trees and shrubs had perfected their wood and were ready for winter. Mr. Stupart's report on the Dawson climate, which is appended to this report, shows that on an average there is no frost from May 23 to August 23, or a period of 92 days, that the temperature rises to 70° or over for 16 days, or for half the period the temperature is 70° or over. Below I give a short table of the temperatures at Dawson and Ottawa for the months of May, June, July and August for the year 1900. The extract is taken from the Meteorological Report for 1902.

Table of temperatures from Meteorological report.

Ottawa, Lat. 45° 26'; Alt. 294 feet.

May	84·8	27·0	53·3
June	85·8	46·0	66·6
July	87·8	48·0	68·9
August	88·8	49·0	69·2

Winnipeg, Lat. 49° 53'; Alt. 760 feet.

May	91·5	14·0	57·3
June	100·5	33·0	66·3
July	86·2	41·0	64·9
August	88·2	45·0	67·4

Calgary, Lat. 51° 2'; Alt. 3,389 feet.

May	79·0	28·0	51·8
June	92·0	30·0	57·6
July	85·0	36·6	58·2
August	90·0	30·0	55·1

Dawson, Lat. 64° 15'; Alt. 1,200 feet.

May	67·3	22·7	46·6
June	87·6	36·4	57·2
July	85·9	41·1	61·1
August	81·3	39·0	53·1

The above are the four growing months everywhere in our climate and the most sceptical must admit that leaving out bright sunshine and length of day Dawson makes a wonderful showing. With these two factors added we are quite safe in predicting a great future for the Yukon district as a producer of everything needed to support a very large population.

With the facts learned last season and my former knowledge of the Peace River country, the Mackenzie River valley, and northern British Columbia, I am quite within the mark when I say that all the land having a suitable soil within this immense area will in the future produce enormous crops of all the cereals, wheat included. It is well within the memory of us all that growing wheat was for many years considered a doubtful matter at Edmonton and Little Slave lake. These points have passed the experimental stage and now good crops of wheat are secured every year. Two factors combine to make this success. The wheat itself is gradually conforming to its environment and ripening earlier, and local frosts are becoming rarer as the land comes more under the plough. The same changes will take place farther to the north and when wheat is grown as winter wheat and can start at once after the snow is off it is hard to state how far this may be, at any rate as far as Dawson in latitude 64° 15' where we know there are three months without frost.

A large grain producing area.

Mr. R. F. Stupart reports as follows on the climate of Dawson :—

Climate of Dawson, Yukon.

A somewhat broken series of observations at Dawson and various other places in Yukon Territory between 1895 and 1898, and a continuous series at Dawson during the past three years, afford data for estimating with a fair degree of accuracy the average climatic conditions of the Klondike. The average annual mean temperature is about 22° ; the mean of the three summer months is about 57°, July being 61° ; and of three winter months—16°, with January—23.° Spring may be said to open towards the end of April, the last zero temperature of the winter usually occurring about the 5th of this month. May, with an average temperature of 44°, is by no means an unpleasant month and the 23rd is the average date of the last frost of spring. Daily observations during five summers indicate that on the average the temperature rises to 70° or higher on 46 days and to 80° or higher on 14 days; 90° was recorded in Dawson in June, 1899, and 95° in July of the same year. These temperatures with much bright sunshine and an absence of frost during three months, together with the long days of a latitude within a few degrees of the Arctic Circle amply account for the success so far achieved by market gardeners near Dawson in growing a large variety of garden produce including lettuce, radish, cabbage, cauliflower and potatoes, and warrant the belief that the hardier cereals might possibly be a successful crop both in parts of Yukon Territory and in the far northern districts of the Mackenzie River basin. August 23 would appear to be the average date of the first autumnal frost, the temperature rapidly declining towards the close of this month. Although night frosts are not infrequent in

Average climatic conditions,

Average date of autumn frost.

Winter temperatures.

September, the month as a whole is mild with a mean temperature of 42°. October may be fairly termed a winter month, the mean temperature being but 22°.5 and the first zero of winter recorded on the average about the 18th. Ice usually begins to run in the Yukon about the second week but it is not until quite the end of the month or early in November that the river is frozen fast. The temperature on the average during a winter falls to 20° below zero or lower on 72 days, to 40° below or lower on 21 days, to 50° below or lower on 7 days, and to 60° below or lower on 2 days. In January, 1896, 65° below was registered at Fort Constantine, and in January, 1901, 68° below was recorded at Dawson.

Observations of rain and snow have until the close of last summer been very fragmentary but it is probable that the summer rainfall near Dawson is usually between seven and nine inches, and that the total snowfall of the autumn and winter is between 50 and 60 inches.

Dawson well protected from winds.

Dawson being situated near the river with high hills or mountains on all sides is well protected from the winds, and a feature of the town and indeed of the neighbouring country is the long periods of calm weather which occur.

Geology of the West Coast of Vancouver Island.

Mr. Arthur Webster.

Field of operation.

In accordance with instructions received from Dr. Bell in June, 1902, to make a preliminary geological examination of the west coast of Vancouver Island, I beg to submit the following report of the work accomplished :—

Much difficulty was found in obtaining reliable information as to the best means of making the exploration. It was decided to employ Indians and their canoes, engaged from time to time from their numerous villages along the coast. This plan, after trial, was found to be impracticable, as only the old and useless men were left, the younger ones being away either sealing or fishing salmon for the Fraser river or other canneries. The few Indians remaining in the villages demanded exorbitant wages, and in any case were not to be relied on to work, except when hungry. I, therefore, considered it best to purchase a nineteen-foot sealing boat in Victoria and to do what was possible in it with Professor Haycock and one man. I may here say that I found the professor an able assistant, not only in regard to geological matters but for his skill in seamanship and willingness to help in every way.

The trend of the westerly coast of Vancouver Island is north-westerly from Esquimalt harbour to Cape Scott. The shore is generally rocky, with a heavy surf usually breaking upon it, making it difficult and often dangerous to land on the exposed parts, but it is indented by many deep bays, arms and fiords, which, when once gained, afford excellent shelter. Much of the interior of the island has not, as far as I can learn, been explored even by the Indians, who seem to live entirely near the salt water and seldom venture inland.

Viewed from the shore line the interior of the island appears to be very much broken by deep valleys and steep ragged hills, many of the latter being snow-capped. The highest of these hills, however, does not exceed, I think, six thousand feet above the level of the sea. The direction of the ranges and valleys is usually roughly parallel to the shore line.

Examination confined to shore line.

The coast, including the inlets and bays, was examined only along the shore line, no inland work of any extent having been done, the thickness of the undergrowth, consisting of 'sallal' bushes and ferns, as well as the quantity of fallen timber, causing much labour and loss of time for very little result. Where examined the shore line was carefully worked out and will not, I think, require further investigation, but the work as a whole must be considered as only preliminary and the knowledge gained as but a foundation for future exploration.

Vancouver series.

In describing the geology I shall use the late Dr. G. M. Dawson's nomenclature as far as possible, which is described on pages 10 to 14 of his report for 1887. In this description the igneous dark-coloured trappean rocks with associated mica-schists, and gneisses, are said to be interbedded with argilletes and crystalline limestones, classed as Triassic, on the evidence of the fossils discovered in the argillites, and named the Vancouver series. On the west coast of Vancouver island, however, we find the igneous rocks piercing and including fragments and masses of the crystalline limestones, just as the granites at and near their contact with the traps pierce and include the latter. Nowhere did I see clear evidence of the limestones being interbedded with the traps, though in many places at first view there is every appearance of their being so. I therefore look upon the limestones as being older and unconformable. Owing probably to the highly altered and crystalline character of the limestones, only a few very obscure fossils were found in them—not, I fear, sufficient to determine their age, but perhaps by more extensive research, enough might be discovered to throw light upon this point. The tracing of the boundaries of these various limestone bands is, I think, of importance, as almost invariably the deposits of iron and copper ores are found at or near the contact of the limestones with the igneous or volcanic rocks.

Admiralty charts used.

In making the examination of the coast, the excellent charts issued under the direction of the Admiralty and the maps of the southern part of the island, procured from the provincial government, were used as a topographical base, rendering it unnecessary to make any surveys. The dips and strikes of the rocks and the bearings of the glacial striæ are given from the magnetic north, the variation being 23° east. The distances are stated in nautical miles.

Pedder bay and inlet.

The party left Victoria on June 20 for Pedder inlet, where work was commenced, the country between the two points having been already reported on by the late Drs. Selwyn and G. M. Dawson. Pedder bay and inlet are situated about nine miles south-west of Victoria city and the peninsula separating them from Becher bay to the westward forms the extreme south-eastern point of Vancouver Island, Race Rock lighthouse being on a rocky island a mile and a half to the southward.

From Parker bay, about three-quarters of a mile eastward of the Quarantine station at Williams head, round Quarantine cove to Pedder bay, including the point to Williams Head lighthouse and the east shore of Pedder bay and inlet to its head, the exposures of rock are nearly continuous and consist of dark-coloured hornblendic masses very compact and hard but generally much shattered with no evidence whatever of bedding. At Ashe point, near the head of the inlet, they become slightly schistose and at Reid's farm, half a mile further west, decidedly so. The lines of cleavage strike N. 65° W., mag. On Mount Mary, a hill 350 feet high, lying about one mile eastward from Farm point, the hornblendic traps are less shattered and show small veins of epidote. A small talus is seen on the south-westerly side of this hill, showing the direction of the glacial movement.

Large granite area.

From the head of Pedder inlet southerly, along the east shore as far as Shell point, these same rocks are met with, but they are much more shattered and are broken by numerous greenstone dykes. A large mass of granite and syenite occupies the higher ground and low hills of the peninsula between Pedder inlet and Becher bay. Just north of Shell point the granitoid rocks reach the shore and continue exposed from this point round Cape Calver to a quarter of a mile west of Argyle's farm, which lies on the main shore north-west of the westerly point of Bentick island. The eastern limits of this granitoid mass were not determined, but it appears to occupy the greater part of the interior of the peninsula, including North peak, Amy hill and Grouse hill. The greater portion of it is syenite, but it merges into diorite by imperceptible degrees. Bentick island and the smaller islands between it and the mainland are composed of the same rock.

At one-eighth of a mile west of Argyle's farm, we again come upon the fine-grained hornblendic rock of the Vancouver series. The actual contact of this with the syenite is not seen, the exposures being about fifty yards apart and the interval covered by drift. From this point westward all round Becher bay, the dark hornblendic rocks occupy the shore, varying somewhat, however, in that the crystals of hornblende are much larger about Aldridge point and at the 'Clallams' village in Campbells bay. Some prospecting for copper has been carried on along the shores of the bay but it has apparently been abandoned. Prospecting done.

All the islands in the bay are formed of the more or less massive hornblendic rocks of the same series. On Fraser island, the measures are very fine-grained and almost black. Exposures of the same dark hornblendic rock are seen all the way round from Murder bay to the north-east corner of Becher bay and easterly to the head of Pedder inlet.

From Cape Aldrich westward and northward, round Beechey head to the entrance of Sooke harbour at East Sooke post office, the rocks are of the same (Vancouver) series, showing no evidence of stratification. Two old abandoned openings are to be seen a short distance inland from Company point. Little work had been done, however. These prospects are in magnetic iron ore, of which there may be a considerable body, but the ore is much charged upon the surface with iron and copper pyrites, with some pyrrhotite. Cape Aldrich to Sooke harbour.

Sooke harbour is entered by a narrow crooked channel, owing to a sand spit nearly closing its mouth, and might be easily passed by one not knowing the coast. In bad weather from the west, a heavy sea breaks at the mouth, especially if tide and wind meet. Once the harbour is gained, however, there is a large expanse of deep water and good shelter.

From West Sooke post office, following the northerly shore of the harbour eastward, no rock exposures are seen till we reach Coopers cove, towards the north-east side of the harbour. Here upon a narrow peninsula running eastward nearly across the mouth of the cove, occurs a cemented conglomerate, composed chiefly of beach pebbles and coarse sand holding small disconnected beds or patches of lignite. Inside the cove and at its north end dark green fine-grained hornblendic rock very compact and without any sign of stratification is seen.

On section 63 on the east side of Coopers cove there is a band eight feet wide of highly altered, somewhat shaly, argillaceous rock, interbedded with the harder and more compact greenstone, the contact on both sides being plainly visible. This band strikes N. 60° E., mag. and dips to the westward at an angle of 60°. On section 60 of Coopers cove.

Coopers cove, the same argillites are seen, having a thickness of 15 feet and dipping also to the westward, being separated from the former by 500 feet of dark green igneous rock, which weathers on the surface to rounded masses, like concretions. On section 57 on the east side of the mouth of Coopers cove, another exposure of the stratified rocks occurs, with the same dip and strike as before and separated by the dark green hornblendic rock in the same manner as the others. In the last two exposures the argillites appear to gradually merge into the dark green massive rock, no clear line of demarcation being seen.

Argillites.

From this point the stratified argillites appear in several places as far as the mouth of the small brook on sections 59-70, separated by and interstratified with the trappean rocks. The latter however, here, show a decided basaltic character.

Basalt.

From this locality southward, round the head of Sooke harbour to section 110, greenstones, some of which are of a basaltic character, line the shore. At the mouth of a brook in the south-east corner of Sooke harbour, gray basaltic rocks are met with, cut by numerous porphyry dykes and holding small veins with stringers of epidote. From this locality to section 98, including Anderson cove, only the dark massive igneous rocks are met with, showing little or no variation in character. These igneous rocks of the Vancouver series are seen westward along the south shore of the harbour as far as East Sooke post office. At Cartwrights, on section 97, traces of native copper are found in the hornblendic rock, adjoining a porphyritic dyke. These dark rocks extend southward across the post road, running between Victoria and East Sooke post office.

Mount Maguin.

Mount Maguin, lying to the south of sections 98-110, occupies a considerable area and is composed of syenite or diorite. At and near the junction of the syenite and igneous rocks there is what appears to be an extensive deposit of copper ore, chiefly chalcopyrite but mixed with some magnetic iron. A shaft, thirty feet deep, had been sunk and work was still going on with a small force of men on the 1st of July. The ore occurs in a hornblendic gangue and is said to assay well. The prospect is well situated for shipping, having a fair grade to deep water. The work was not sufficiently advanced to form any reliable estimate of the extent of the deposit. About 150 feet north of the copper deposit, a peculiar granitoid rock appears, consisting of large crystals of light-coloured, almost white feldspar, and dark grayish green hornblende. This outcrop is of small extent and could be traced for only a few hundred feet.

Cape Sherringham.

At Cape Sherringham and for a mile to the eastward towards the mouth of Sooke harbour, the rocks consist of hard massive greenstone,

holding epidote in veins and patches. In the breaks between the exposures of trap there occurs a sandy conglomerate, holding angular and rounded fragments of the same greenstone. Some of the embedded masses show striæ; but the glacial action may have been prior to the conglomerate formation, the trap itself showing glacial striæ striking S. 75° W. At the mouth of Coal creek, one mile and a half east of Sherringham point, large exposures of sandstone are seen, holding vast quantities of fossil shells of various species of which a sufficient collection was made to enable the horizon of these beds to be defined. These sandstones lie nearly flat, dipping at a small angle to the westward. The sandstones are seen resting on the trap just eastward of Sherringham point. An ascending section gives the following:— Section.

	Feet.
Moderately hard gray sandstone	10
Sandstone shell beds with traces of lignite	6
Soft sandstone with concretions	12
Friable sandstone	10
Loose earth and loam	8
	46

A portion of the lower bed is covered by the sea, so that its thickness was not determined.

From half a mile west of Muir creek to the mouth of Coal creek there are extensive exposures of these sandstones, more or less fossiliferous and holding lignite, the actual contact with the traps not, however, being seen. The traps are partially basaltic. Muir creek.

At Otter point basaltic greenstones also occur.

Along the north-east shore of Sooke bay, half a mile from the entrance to Sooke harbour, banks, 60 to 70 feet high are seen, consisting of boulder clay, holding striated pebbles and boulders, and underlaid by coarse conglomerate. A few remains of vegetable matter are seen in the clays. On section 16, Sooke bay, the following descending section of these clays and sandstones occurs:— Section on Sooke bay.

	Feet.
Boulder clay	15
Soft sandstones and gravel with concretions of sandstones	20
Friable sandstones	14
Sand and small pebbles loosely cemented	12
Conglomerate	2
	63

The thickness of the lower bed of conglomerate was not determined. The conglomerate is partly cemented by oxide of iron.

The following ascending section of these sandstones occurs on section 6, Sooke bay:—

	Feet.
Beach at high water.	
Hard bedded sandstones, beds 6 inches thick	4
Conglomerates (beach pebbles)	6
Soft friable sandstone	10
Boulder clay	20
	40

Section on bore-hole.

A section given by a bore-hole put down on the west side of the sand strip at the mouth of Sooke harbour, by Dr. C. Forbes in 1863, is stated to be as follows in descending order:—

	Feet.	Inches.
Drift	?	
Clay and sand	?	
Conglomerate	4	0
Red sandstone	12	0
Gray sandstone	15	0
Till (shale)?	8	0
Coal	0	6
Shale	2	6
Fire clay	2	6
Till	6	0
Kringle	1	0
Red sandstone	3	0
Coal	1	0
Shale and fire clay	18	0
Gray sandstone	2	0
Kringle	1	0
Till	6	0
	82	6

Sherringham cape to Providence cove.

From Sherringham point to Providence cove, the measures were not examined, the distance along the coast being 22 miles, but only seen from the steamer 'Queen City' on its way to St. Juan port. After leaving Sherringham point, they appear to consist of a dark coloured mica schist of the same character as those at Providence cove. The eastern boundary of these schists was not determined, but is probably at or near the mouth of Jordan river.

Providence cove lies about three miles east of Cape St. Juan, which forms the south-east point of Port St. Juan. The rocks here consist of mica schists of rather coarser texture than those to the westward. They are so folded and twisted that it is impossible to distinguish bedding from cleavage, but the general strike appears to be from N. 10° E. to N. 60° E., with a westerly dip at an angle of from 10° to 40°. At several points beginning about one mile west of Providence cove and extending to Minnesota point, which is about one-third of a mile east of Cape St. Juan these slates or schists are overlaid unconformably by conglomerates and friable sandstones, notably at Minnesota point, where they have a thickness of forty feet. These sandstones resemble those of Coal and Muir creeks, and the lower beds contain a few obscure fossils, chiefly corals.

At Cape St. Juan and on Observatory island, just off it, the slates and schists are well seen, but so broken, twisted and altered by intrusive trap dykes, (some of which run with the strike, having offshoots cutting the slates at right angles) that no estimate of the thickness could be satisfactorily made. The general strike of the slate beds is north-east and south-west, with a westerly dip of from 10° to 45°. Both sides of Port St. Juan are formed by mica-slates or schists, very much broken and contorted by trap dykes which cut them in all directions. The shores on the west side rise abruptly from the water's edge and are worn into many curious forms from the erosion of the heavy surf which continually beats upon them. The valley of the St. Juan river falls in from the eastward, forming a low delta which extends some distance inland. An island of considerable extent lies at its mouth, nearly closing the southern passage by a sand bar, the main channel flowing into the harbour on its north side. Port St. Juan.

The slates and schists of the St. Juan, extend up the Gordon river, which joins the former about half a mile from its mouth. For some two and a half miles they are much bent and twisted by numerous trap dykes. The strike is from north and south to south sixty degrees west, the dip being to the westward at all angles from 10° to 90°. These are followed to the northward by a dark greenish diorite which shows itself for nearly half a mile About a mile from Newton's camp, or some five miles on the trail from the mouth of the Gordon river, a band of highly crystalline limestone occurs, forty feet in thickness, followed by diorite, the northern boundary of which was not determined. Mount Edinburgh, lying N. 15° E. mag. from Newton's camp, is said to be of limestone. Gordon river.

The Newton mine, which is on the Gordon river about six miles from its mouth, is in magnetic iron ore with a good surface showing, but it has some traces of iron pyrites. A good deal of work has been Newton mine.

done here. A shaft nearly 300 feet deep has been sunk, and at this depth it is proposed to drive a cross-cut to tap the ore. About 14 hands are employed, but as yet, no ore has been shipped. The timber along the Gordon river is generally good and consists chiefly of spruce, hemlock and balsam. One spruce tree 5 feet 2 inches in diameter at twenty feet from the ground had 285 well marked rings of growth.

Owen point to Cape Beale.

At Owen point, on the north-west side of Port St. Juan, the mica schists are seen overlaid unconformably by sandstones similar to those seen between Providence cove and Minnesota point. The sandstones lie nearly flat and continue for some miles towards Carmanah.

Owing to bad weather and westerly winds, a stretch of about thirty miles of coast between Owen point and Cape Beale could not be examined, but it is probably occupied as far as Nitinat by the St Juan mica-schists of the Vancouver series.

In the bay upon the main shore, 200 yards west of the head of Bamfield creek, fine-grained, dark trappean rocks are exposed, having a slight conchoidal fracture, cut by masses of intrusive syenite and gray diorite containing a very small proportion of biotite. The greater part of the diorite has a grayish appearance, but one band is of a reddish colour. The ridges run about N. 75° W. mag.

The islands to the westward of this bay were not examined, but they seem to be formed of similar rocks. From this bay to the south and eastward, towards Cape Beale, as far as Sandy bay, only fine-grained traps were seen and they are not cut by any intrusive dykes. Upon the trail towards Cape Beale and about one mile and a half south from the head of Bamfield creek occurs a band of fine-grained gray diorite which is seen as far as the Long beach, and here the diorite cuts the traps of the Vancouver series. On Long beach black magnetic sand is found exposed in beds of one-sixth to one-half inch thick on the lee side of a mass of rock. No colours of gold were observed and the deposit is of no importance. Diorite, both of light and darker coloured varieties, extends from this point to Cape Beale.

At Cape Beale lighthouse, which stands 130 feet above sea-level, upon an island separated from the mainland by a narrow channel which is almost dry at low tide, the rock is of coarser grain and lighter colour, much resembling a granite. There is no evidence of glacial action.

Cape Beale lighthouse.

The exposures on Bamfield creek consist of fine-grained hornblendic trap-rock like that cut by the diorites to the south of it. From the mouth of Bamfield creek north-eastward up the easterly shore of the Alberni canal to Dixons island and point only grayish

diorites are met with. Here a fine-grained crystalline limestone shows itself, striking south 50° to 60° E. and dipping south-westerly at an angle of 50°. The stratification is very apparent, the beds being from 5 to 7 inches thick and the band probably 200 feet thick.

The south-west point of Poett cove is of fine-grained greenish trap. About a hundred yards further into the cove there is crystalline limestone, apparently interbedded with the trap-rock, striking north and south and dipping westerly at an angle of 40° to 50°.

Limestone also occupies the north-east side of the entrance of this cove, striking S. 20° W., dipping westerly at an angle of 35° and seen for half a mile into Numukamis bay, succeeded by light-coloured dioritic beds. Crystalline limestone is again seen on the south-east end of Santa Maria island and on a small island just off it, while on the north end gray granitic rock is met with. At the south end there are traces of magnetic iron ore in what would seem to be a dyke which breaks up and shatters the adjoining rocks. Limestones.

The Sarita river falls into the Alberni canal from the eastward, about half-way up Numukamis bay, forming a flat at its mouth about three-quarters of a mile wide, its valley being bordered by low hills on either side. An iron deposit, associated with limestone, occurs a few miles from its mouth. On a small island opposite the mouth of this river, a porphyritic rock is seen, which is probably intrusive. At the point on the north-eastern shore, near the small Indian village, is a much jointed and broken greenstone, resembling that seen on the south end of Santa Maria island. A highly altered chert-rock occurs in the small bay about one mile north-east of the mouth of Sarita river. These rocks are also seen on Congress island, rather less altered and having an obscure bedding. The stratification would appear to be horizontal, but it is much disturbed by trap dykes. Sarita river.

Fine-grained greenstone forms the point of land separating Numukamis from San Mateo bay, but at Cherry point on the north-east side of the bay, granitoid rock appears for about half a mile. Diorites or granites are seen alternately from this point, as far as Coleman creek, the granitoid rock being rather in excess of the trap. From Coleman creek northward to opposite the mouth of Nahmint river rocks of the same character occur, except that perhaps greenstone predominates. San Mateo bay.

From this point to within half a mile south of the mouth of China creek, exposures of a grayish granite are almost continuous. From the shapes and slopes of the hills in the interior, I would judge them to be also granite. From China creek northward through the second narrows to the head of the canal at Stamp harbour, the rock is all Hills in the interior probably granite.

dark greenish trap of the Vancouver series, as is also the west side of the canal from its head to opposite Mount Hankin where an obscure strike was observed south 5° east ; dip westerly at an angle of 25°.

From half a mile south of Coos creek, where a small stream comes in from the westward, grayish granite, composed of hornblende and feldspar with but little free quartz, is exposed almost the entire way to the north side of the mouth of Nahmint river. Thence as far as the ore bunkers of the Monitor mine, about half a mile north of the mouth of Green creek, greenish fine-grained trap is almost continuous.

Uchucklesit harbour.

From Green creek along the north shore of Uchucklesit harbour, bands of crystalline limestone and fine-grained trap, which at first sight would appear to be interbedded, are met with : but in a small bay two-thirds of a mile to the south-west of the Monitor bunkers, the hornblendic rocks are certainly intrusive, cutting and including fragments and masses of the limestones. The limestone on the small island, at the mouth of Uchucklesit harbour, strikes N. 50° E. ; dip easterly at an angle of 25° to 45°.

The limestones are as much altered in the middle of the bands as at the contact with the traps and are so folded and contorted that a very close survey would be required to make even an approximate section.

Copper.

At the Happy John claim, a copper prospect adjoining to the westward the Monitor mine, the contact shows without question that here the limestone is the older rock, the trap inclosing fragments and masses of the limestone.

The west side of Uchucklesit harbour, the south-westerly point and the shores of Rainy bay and Useless inlet are of hard compact hornblendic rock, marked by epidote in small veins and stringers. At the south-east point of the entrance of Rainy bay, a small band of amygdaloid is met with. Owing to heavy weather we were unable to get out of the south-west entrance of Useless inlet and were obliged to return round the north end of Seddall island to the small harbour of Ecole on its south-east side and opposite the north end of Copper island, where we remained a day to dry out provisions and blankets.

Ecole harbour.

The rock on the north side of Ecole harbour and extending for a mile or more to the westward, is white crystalline limestone, much cut by traps, confirming the view that the limestone is the older rock and that the traps are intrusive, at least in certain localities. Mr. Haycock found here traces of obscure fossil remains. The rock on the easterly side of Seddall island is all dark, fine-grained trap.

On the north-east end of Copper island and down the east shore as far as Clifton bay, crystalline limestones, intimately associated with traps, strike south 40° west. These limestones cross the middle of Copper island and can be traced as far as Marble cove on its westerly side. On Copper island, a short distance inland and seven hundred feet above sea-level, the Pacific Steel company of Ironside, Wash., U.S.A., are opening up an iron claim. The ore is magnetic iron of good quality and said to assay 60 per cent metallic iron. A tunnel has been driven two hundred and two feet following the ore, which shows a width of about one hundred feet near the limestone and trap contact and extends to the top of the hill, one hundred feet above the sea. The mine has good facilities for shipping, as there are sixty fathoms of water in the cove. Copper island.

Limestone is reported to occur a short distance up the Sarita river, at another iron property belonging to this company. The small islands between Copper island and the eastern main shore are of fine-grained dense hornblendic rock. So far as observed, the limestone, when in large bands invariably rests on the trap of the Vancouver series.

The shores between Useless inlet and Clayoquot were not examined, owing to bad weather and a desire to take the steamer to the latter point. White crystalline limestone is said to have been quarried for marble in Effingham inlet. Useless inlet and Clayoquot sound.

Clayoquot store and post office are situated on a small island in Broken channel, lying about half-way between Vargas and Meares islands. The formation here is a very fine-grained dark hornblendic rock, having the general appearance of a trap, but in places showing obscure bedding.

The southern part of Round island, lying a mile east of Clayoquot post office, consists of gray granite, the north half being of a very dark fine-grained hornblendic rock, weathering almost black. Being cut by dykes, the actual contact of these rocks with the granites is not evident, but the line of general contact strikes about N. 70° W. The same dark-coloured hornblendic rock is seen on the main land at the low point east of Round island. These rocks are again seen on a small island at the entrance to Brownings passage. Here they show a slight slaty cleavage and are exposed as far as the narrows in Brownings passage, where on a small island, gray micaceous hornblendic granite is met with. Round island.

At the east end of Meares island, granites occur in large masses along Indian island, they appear to be more hornblendic, carry less mica and are of a darker colour. Here mica-slates striking from N. Meares island.

40° to 60° W., dip easterly, at an angle of 85°, much resemble gneisses and contain a good deal of free quartz, running parallel to the bedding and cleavage. Many of the layers weather to a whitish or a drab colour. The fracture is dark gray with dark-coloured mica on the cleavage faces. The thickness of these slates is probably about 1,600 feet.

Indian island. The easterly end of Indian island and the point of the mainland opposite consists of dark gray granite, extending for some distance inland. Crossing eastward to the mainland, these granites continue for a mile into the bay, bearing N. 8° E. from the east end of Indian island, and are followed by gneissic rocks, striking N. 70° W., to within a mile of the mouth of Kennedy river, where dark hornblende granite occurs and extends half a mile up the river, when white crystalline limestone shows itself as far as the head of the rapid. From the rapids, up the river to the lake, the shores are low and swampy, showing no exposures of rock. A small salmon cannery is in operation at the mouth of the river.

Kennedy lake. Kennedy lake, of which this river is the outlet, is a considerable sheet of fresh water lying to the north of Wreck bay and east of Tofino inlet and separated on the south from the ocean by several miles of low-lying sands. The surrounding country is covered by a scrubby growth, chiefly of spruce, and the lake is fed by the Elk river, which falls into its north-east arm. Going round the shores dark-weathering, very hard, hornblendic rock and white crystalline limestone are seen at the point north of a deep bay on the south side of the lake. This has beds or rather bands of a darker coloured hard character which are not so much affected by weathering as the softer ones. The strike is north 45° west; dip south-westerly at an angle of 50°. I was not able to determine its thickness.

Limestone. Hornblendic rock, cut by several trap dykes succeeds the limestones. At the extremity of the point of South bay is a fine-grained amygdaloid marked by epidote. Greenish-gray hornblendic rocks occupy the south-east side of South bay as far as a small stream from the south. Crystalline limestones, cut by greenstone dykes, compose the south-east shore as far as the south side of a small bay, bearing S. 10° E. mag. from Long island. Another exposure of limestone, striking S. 20° E. and cut by an 8-foot dyke, is seen in a small bay east from the south end of Long island.

Elk river. North-eastward of Long island, Long point runs out to the north-westward. This consists of a dark-greenish fine-grained trap, very compact and holding feldspar and epidote. Rocky island, half a mile north-west of the point, is composed of the same kind of rock, as

is also the western side of the north-east arm, as far as the mouth of a small stream falling in from the north. The rock on both sides of the narrows towards the mouth of Elk river is light-coloured hornblende granite, holding free quartz. This is followed northward by greenish trap, holding epidote, of the same character as that on Long point. A small exposure of limestone is seen at the mouth of Elk river. The river is not shown correctly on the chart.

Elk river.

Mount Maitland, to the eastward, appears through the glass to be capped by limestone. Several prospects lie some few miles up Elk river, one, the 'Rose Marie,' having free gold in quartz. From the narrows, southward along the west side of the point, towards the outlet a massive fine-grained hornblendic rock prevails for three-fourths of a mile. Then a small exposure of crystalline limestone is seen resting on this rock. The east shore of the western arm of the lake, Agnes island and the point south of it, consist of a coarse-grained hornblende granite. The rock seen on both sides of the narrows is a dark-weathering whitish-gray granite, followed towards the head of the arm, by a dark greenish coloured trappean rock which weathers much like a granite. Half a mile from the head of the inlet, which is wrongly shown on the map, there is a small exposure of crystalline limestone, striking S. 20° E. and dipping easterly at an angle of 40°, cut by intrusive greenish trap. The point on the west side of the entrance to this arm is composed of a greenish hornblendic rock, probably diorite. At the cannery on the right bank of Kennedy river a knob of gray granite is met with.

Kennedy river and Tofino inlet.

On the long point jutting out from the mouth of Kennedy river, forming the south-eastern entrance to Tofino inlet, there occurs a gneissic rock, which strikes S. 80° E. and dips easterly at an angle of 35°. The east shore of Tofino inlet, with the exception of a small exposure of crystalline limestone, is gray, coarse-grained granite. The limestone occurs again about one mile south from Deer river. At one-eighth of a mile from the mouth of Deer river, a gray schistose rock replaces the granite. The beds here would appear to be a highly altered and contorted sedimentary rock. Greenish fine-grained trap is seen at the month of Deer river. On the west shore, for two miles south from the head the Vancouver series is represented by igneous hornblendic rock, after which gray schistose measures are met with, consisting of rather coarse-grained gneissic rock containing quartz, feldspar, mica and hornblende.

A very small patch of white crystalline limestone, associated with greenish igneous rock, is seen on a small island just north of Woman island. Coarse gray granites and granitoid rocks form the long point stretching southward between Tranquil creek and Tofino inlet.

Tranquil creek.

Limestone occurs on the west shore at the mouth of Tranquil creek, having a width of 150 yards, and striking from S. 60° W. to east and west. Gray granite lies on both sides of it. From this locality southerly to the main point north of Warne island, nothing but coarse gray granite is seen.

The north end of Warne island is granitoid rock, consisting of veins of true granite with quartzite and dark hornblendic zones. Mica-schists or micaceous gneiss, striking N. 20° W. and dipping at an angle of 60° occur at the most southerly part of the point, turning into Deception passage: probably a continuation of those seen on Indian island. Close to the entrance of Fortune channel, dark hornblendic rock, slightly schistose in places but chiefly massive, is seen and gray granites occupy the west shore from the entrance to a point opposite Race narrows.

Warne bay.

Compact trap, marked by epidotic nodules and gashes occupies both sides and the head of Warne bay. The face of the most southern part of the north shore in Race narrows is white crystalline limestone, with a marble-like fracture, weathering to an ochreous yellow. Towards the western point, the limestones assume a schistose character and strike N. 40° to 50° W.; dip. N.E. at an angle of 30°. These are succeeded at the point leading into Bedwell sound by greenish trap.

Bedwell sound.

Leaving the limestone, which is much twisted and contorted by intruding trap on the east shore, opposite Fern point, nothing is seen in Bedwell sound but the igneous rocks of the Vancouver series which occur at one point on the west shore about half way to the head of the sound; then a small band of cherty bedded rock is seen for 400 yards, striking north 30° west and dipping westerly at an angle of 20° to 40°. The sound has high rocky banks, alternating with short beaches.

Cypress bay.

From Turn point, running to the southward between Bedwell sound and Cypress bay, high rocky and bare bluffs show themselves. They are composed of dark and rather compact trap. Just round the point and opposite some small islands in Cypress bay, a bedded cherty rock appears, resembling that seen in Bedwell sound. This continues round Cypress bay to Calm creek. From this creek to Trout river, which falls into Cypress bay the ordinary traps are met with. The point on the left bank of Trout river at its mouth, is a dark diorite, very compact and weathering to a spotted white and green surface. With the exception of a small vein of calcareous rock, associated with traces of yellow copper ore, seen in a small bay south of the mouth of Trout river, nothing but the trap was noticed around the Cat-faced mountains as far as Bawden bay, near the entrance of Herbert arm. These rocks continue round Charles point, at the en-

trance to Herbert arm, occasionally becoming schistose and all of them being marked by epidote in stringers and nodules. Three-quarters of a mile east of Charles Point, towards White pine cove there is a dark-weathering crystalline limestone, having harder and somewhat siliceous bands. The strike is S. 40° E.; dip very irregular but generally to the south-westward at angles of from 30° to 60°.

White Pine cove.

The islands north of this exposure show bands of cherty white limestone, highly crystalline and apparently interbedded with the trap. From these islands the rock around White Pine cove is green, heavy trap, much marked by epidote. Just beyond the north point of the cove, yellow-weathering limestone is seen, in a narrow band, having trap on either side. Its strike is S. 10° W.; dip easterly at an angle of 50°. This band follows the shore for several hundred yards and is somewhat slaty in structure. It is followed to the north by green hornblendic rocks to within a mile of the head of the arm, when a small exposure of crystalline limestone is seen, striking N. 20° E.; dip eastward at an angle of 45°. The head of the arm is bounded northerly and easterly by high rocky mountains with steep sides and pointed, jagged crests. Small exposures of limestone occur at several points along the west shore, intimately associated with fine-grained dark trap. On the southern part of a long point, there is a bed of trappean agglomerate in which the surfaces of the balls or nodules are apparently fused together at their contact with one another. This bed stands out of the water about ten feet and is overlaid and flanked on either side by massive trap. The exposure is about fifty feet wide. Across the bay south of this point there is a small exposure of crystalline limestone, striking S. 20° W. and dipping westerly. This seems to underlie stratified gneissic rock with the same dip and strike for a short distance. Then maintaining the same dip and strike it is found for a short distance overlying rocks of the same character.

Limestones.

From this locality going round into North arm to a point half a mile south of the Indian village of 'Alelyon,' nothing is seen but massive hornblendic rock. Here a stratified quartzite, weathering brownish-yellow and holding quantities of small cubes of iron pyrites is seen striking N. 70° E., with a northerly dip of 50° From the village, dark gray hornblendic granite extends to one mile south of the eastern entrance to Shelter arm, here on a small island a thirty-foot band of crystalline limestone appears, striking east and west. The contact of clearly intrusive granitoid rocks is seen on both sides of it. From this, for half a mile into the narrows, on the east side of Obstruction island, occurs coarse-grained trap, having a slight tendency to become schistose.

Shelter arm.

The northern point of the narrows consists of a massive granite, the small island just off this point being also granite of a gray colour, holding much free quartz. These granites extend round the point, where the contact with the dark green trap is plainly seen, the granites being certainly the newer and intrusive rock, forming small dykes which enter the trap and inclose many fragments of the latter, their edges being sharp and distinct. The green trap extends round the bay to the narrows at the head of the arm. This is slightly schistose in spots, but more massive at a distance from the granite. Granite and granitoid rock form both sides of the arm at its head, rising in high precipitous cliffs, especially on the west side. The hills appear to be glaciated for at least 2,000 feet in altitude.

Glaciated cliffs.

On the north-west shore of Shelter arm from the narrows as far as the stream and beach, north of Obstruction island, with the exception of a small patch of crystalline limestone, the rocks consist of diorites cut by intrusive granites, inclosing masses of the older rock. From this stream to a deep bay, north of the long point running eastward towards Obstruction island, nothing is met with but dark green fine-grained greenstone, holding less epidote than usual. At the point itself and along the shore thence westerly and along both sides of Sydney inlet to within three and a half miles of Sharp point and Refuge cove (at the south-west entrance to the inlet), only granitoid rocks are seen. They often resemble gray diorite and hold a small percentage of mica.

Flores island.

On the north-east and north-west sides of Flores island, including Steamer cove and Rocky passage, south to within two and one-half miles from the mouth of Matilda creek, gray fine-grained granites are met with. Thence southward, including Matilda creek and the shore past Ahousat village, on to White Sand bay, only greenstones of the Vancouver series are exposed.

Cone island.

Cone island lies in the middle of the North Arm channel, about two and a half miles west of north from Ahousat village. The hill predominating this island is in the form of a nearly perfect cone formed of granite and rising about 1,000 feet above the sea. On the south-west side of the island, half a mile north from the south-west point, gneissic rocks of no great extent are found striking east and west and dipping northerly at an angle of 45°. The north-west corner of the island is formed of a fine-grained gray hornblende granite.

Coal measures, with some coal in sight, are said to occur at Rafael point on the south-west corner of Flores island. We were unable, however, to make an examination of that part of the island.

Nootka sound.

Friendly cove in Nootka sound was reached by the steamer *Queen City* on August 23. From Burdwood point, eastward from Friendly cove, gray granite extends for a mile to the north-eastward and as far southward as Escalante point, but it was traced no farther. These granites are succeeded to the eastward, between Mounts Banke and Adair, in the Zuciarte channel, by trap, which, in spots, assumes a basaltic form. Granite, which appears to be intrusive, is seen for half a mile in the bay under Mills mountain. This is followed by dark trap rock, much broken, which, west of Mount Sergeant, becomes slightly schistose, and continues to within a short distance of Point Anderson, itself composed of granitoid rock cutting trap. On the north-east side of this point, a small band of calcareous character strikes N. 10° E. and dips westerly at an angle of 45°. This band is seen for a short distance along the west side of Camp bay.

Muchalat arm.

The easterly side of Camp bay and eastward for half a mile is composed of greenish trap. Gray granite, holding hornblende and mica extends thence with but little interruption for about seven miles and a half up Muchalat arm. At a small brook, about eight miles east of Camp cove, where crystalline limestone occurs, cut and broken, in many places, by both granite and greenstone dykes, the strike of the limestone is S. 70° E; dip southerly at an angle of 45°. From this exposure of limestone to the cannery at the stream and beach south of a small island in mid-channel, granite and granitoid rock holding fragments of the Vancouver series were observed. From this point, gray granite and dark hornblendic rock alternate round the point of, and for half a mile into the southerly extension of the arm where a band of crystalline limestone about 250 yards in extent occurs. This band is not so highly crystalline as is usual with these limestones, but no traces of fossils were discovered. It strikes N. 60° W. and dips south-westward at an angle of 30°. It is probably the same band as that seen two miles west of the cannery. The westerly side of the southerly end of this arm consists of gray granite.

Along the east shore of this arm, from the head as far as the mouth of Gold river, rocks of the Vancouver series are seen continuously. They consist chiefly of fine-grained, dark greenstones, holding very small cubes of iron pyrites and a few small, scattered garnets with epidote. Opposite the point on the west shore of the main arm there occurs a small exposure of amygdaloid. At the mouth of Gold river there is a small Indian village of a few huts. Tradition says that the Spaniards, when occupying the fort and trading post at Friendly cove found gold in this river and worked the gravels. Trap extends from the point on the west side of the river for a quarter of a mile.

Gravels o Gold river said to have been worked for gold.

Gray granite with an occasional small exposure of trap forms the whole north shore of Muchalat arm to the point turning northward into Tlupana arm, including Gore island, which is all gray granite. The granites when in contact with the trap rocks inclose and surround fragments of trap so plentifully in places as to make it difficult to define the dividing line within several hundred feet. The fragments of trap inclosed vary in size from a few inches to several cubic feet, and their edges and angles are but little worn.

Tlupana inlet.

The granitoid rocks continue along the east shore of Tlupana inlet and form the southerly part of Separation saddle. At the northerly narrows on the west side they appear in very abrupt bluffs, covered by moss and bearing a few scattered firs and spruces. On the north-west side very white fine-grained crystalline limestone is cut by many intrusive dykes of dark trappean rock. Its strike is S. 20° E; dip easterly at an angle of 40°. These limestones are seen as far as the stream and beach at the head of North-east bay. Following the north side of the bay, fine-grained dark hornblendic rocks are met with for a mile from the head of the bay to a point opposite a small island. Bands of white crystalline limestone are seen here, both on the main shore and on the islands. The band upon the main shore is seen for some 200 yards. The strike is very uncertain, varying apparently from N. 30° W. to east and west and the dip is northerly at all angles from 5° to 50°.

Limestones cut by trap dykes.

These limestones are followed for a mile south, on the west shore, by fine-grained hornblendic rock. Gray granite is seen on the west shore for a little over half a mile and is succeeded, opposite the south-west end of Separation saddle, by crystalline limestone, cut and broken and so thrown about by intrusions of greenstone that no dip or strike can be indicated. These limestones are seen for nearly a mile, or to the point turning south-west along Tlupana arm. From this point south-westerly and up half-way to the head of Deserted creek, gray granite and granitoid rocks are met with. Limestones are seen around the head of Deserted creek from this point to a place on the south-west shore, nearly two miles from its head. These limestones are much cut by trap dykes; the general strike is, however, south 80° west. They are succeeded by a gray granite, inclosing fragments of a darker rock (some of which appear to be partially flattened) to within a mile of the north-east entrance of Tahsis canal to the north of Canal island.

The north half of Bligh island and its eastern side, including the long peninsula between Ewin creek and the Zucearte channel is composed of the ordinary gray granite. The south-westerly half, including the islands lying between it and Nootka island, are of green hornblendic rocks of the Vancouver series, much cut by granitic dykes.

From Friendly cove (Yuquot village), for two miles north, dark hornblendic rocks occur, which may be highly altered sediments, but having a bedding so very obscure that it cannot be distinguished with certainty. To the northward of these follow, on the west shore, gray granite and granitoid rocks, which include Narrow island at the mouth of Tahsis canal as far as two miles south of Tahsis narrows, which lead westerly to Hecate channel and Esperanza inlet.

Darks traps of Vancouver series.

On the eastern side of Tahsis canal as far as the north end of Narrow island, the measures are concealed, but they are probably the Vancouver series. From this locality northward for three miles, granite and granitoid rocks are seen. Thence to the head of the canal, a distance of about ten miles, rock of the Vancouver series is exposed, consisting chiefly of dark traps. A small exposure of limestone occurs half a mile beyond the second narrows on the east shore.

This limestone is succeeded to the northward by an exposure of agglomerate, dark in colour and consisting of rounded masses of from one to six inches in diameter. This is followed by crystalline limestone, which is seen along the shore for two miles, striking S. 60° E. to S. 80° E. and rising in bluffs 200 feet high at 300 feet from the shore. These limestones are very much cut up and thrown about by the usual intrusive hornblendic rock, which is seen in several places completely surrounding fragments of limestone several feet in length. No fossils rewarded a diligent search. The limestones are followed by traps for half a mile. The latter are succeeded to the northward by crystalline limestone, as far as the beach, a mile from the head of the canal. Dark green hornblendic rock is seen on the east shore near the head of the bay.

Tahsis narrows.

On the west shore for a mile and a half, crystalline limestone again occurs, striking S. 60° S.-E., mag., and is probably a continuation of the band on the east shore. From the limestones southerly to Tahsis narrows, on both sides of the narrows, and for two miles south of them, rocks of the Vancouver series are seen, consisting of dark-coloured fine-grained trap.

On the north shore of Hecate channel and the eastern shore of Zeballos arm, as far as the northern end of the arm, the exposures show little variety, consisting of a fine-grained hornblendic rock, weathering occasionally to a reddish brown, which may without question be classed as belonging to the Vancouver series. No granite or limestone was seen on either shore till reaching the point on the west side of the entrance, when grey granite appears, holding at and near its junction with the traps, masses and fragments of the latter.

Esperanza inlet.

From the entrance of Zeballos arm the north shore of Esperanza inlet, to within half a mile of the point of Espinosa arm, is occupied by gray granite. The eastern point of Espinosa arm and the east shore, as far as its northerly head, show nothing but the Vancouver series, and from the head southward on the west shore to within two miles from the entrance, the same rocks are seen. From this point to the entrance of the arm the rock is gray granite with darker masses embedded in it.

Port Eliza.

These gray granites extend round the point of Queens cove and up both shores of Port Eliza to within a mile of its head. Thence to the head, dark green, almost black, hornblendic rocks, holding much epidote, are seen on both sides. On the west side, three miles from the entrance of Port Eliza, a small exposure of hornblendic rock separates the granites.

The shores from Lending hill on the west shore of the mouth of Port Eliza to Point Tatchu on the open coast, six miles to the westward, are formed of the hornblendic rocks of the Vancouver series. These rocks include Catala island and all the small islands and reefs seen in the north channel and Rolling roads, together with Harbour island at the entrance of Port Eliza. On the extremity of Tatchu point, soft bedded sandstones occur, resembling those seen at Point St. Juan, except that no fossil remains were found in them. An ascending section based on the Vancouver series is as follows :—

	Ft.	In.
Fine conglomerate with small beach pebbles ...	0	10
Fine-grained gray and reddish sandstone.....	3	6
Coarse conglomerate of beach pebbles, 5″ x 4″ the largest, some pebbles but little worn: a few beds of fine-grained sandstone less than 4 inches thick.....	19	6
Fine-grained yellowish-gray sandstone in beds of from 2 feet to 6 inches.....	46	0
	69	10

Nootka sound to Cape Scott.

On the way back to Victoria, a trip was taken by the steamer *Queen City*, from Nootka sound to Cape Scott, but unfortunately the weather both going and returning was so wet and foggy that little was learned of the shores : but much was ascertained as to the best means of carrying on farther explorations. Victoria was reached on October 2.

Glacial striæ are seen in all the arms running inland and generally along the coast from Victoria to Point Tatchu. While the direction

was noted in all cases, further examination inland towards the mountain ranges, from the heads of the arms and fiords, would be necessary to determine the thickness and extent of the ice cap or caps which no doubt covered the greater portion of Vancouver island. The present information gained tends, I think, to show that north of Port St. Juan, all the arms extending inland from the sea held separate glaciers, as in all cases the course of the striæ is with the general trend of the arm in which they were observed.

Glacial evidence in Alberni canal.

In the Alberni canal, the evidence is that an extensive glacier reached for a long distance inland and had its discharge through the canal into Barclay sound; while the ice from the north of Kennedy lake found its way to sea-level across the lowlands between it and Wreck bay. Observations through the glass towards the mountains would make it appear that the glacial roundings and markings reach an altitude of at least 2,000 feet. The absence of terraces is probably owing to the steep and rocky character of the shores. Perched boulders were nowhere observed.

The mines on the west coast of Vancouver island seem at present to be suffering from a general depression. The copper mine at Yuka in Quatsino sound is, I believe, the only one shipping ore in any quantity, while there are several properties that might be made productive.

Iron and copper.

There are several iron claims, in which capital would be, I think, well invested. The copper ores, chiefly chalcopyrite, appear to lie mainly in pockets and are difficult to follow and trace. Nowhere on the coast have I yet seen a true vein carrying ore of permanent value, but it is a country well worthy of being thoroughly prospected.

Very little land on the west side of the island is available for agricultural settlements. Between Victoria and Sooke, there are numerous farms, but the land is usually very light and gravelly, requiring much manure to produce a crop of grain; but the climate seems to favour the growth of roots and grasses. Around the town of Alberni there is a stretch of good farming land under settlement. Very good land is reported near Cape Scott, where there is a considerable settlement of Danes.

Timber.

The timber seen in the area covered by this report does not appear to be of much value from a lumberman's point of view. On the exposed part of the coast and along the rocky shores of the arms and bays, owing probably to the lack of soil and to the strong sea winds, which, especially in winter, drive in from the westward and southward, the timber is more or less scrubby and of short grain. One or

two exceptions were observed, namely, at the mouths of the St. Juan and Gordon rivers and at the head of the Alberni canal. A very few scattered and stunted Douglas firs are seen on the coast itself, but some of fair size were observed at the mouths of streams falling into the different arms, and such trees are reported to be plentiful in the interior. Spruce and hemlock, with some cedars and balsams, on the flats form the chief growth of the forest, while sallal bushes and alders form the chief undergrowth.

GEOLOGY OF THE WEST COAST OF VANCOUVER ISLAND.

Professor Ernest Haycock.

GENERAL OUTLINE OF SEASON'S WORK.

On May 31, I left Ottawa with instructions from you to join Mr. Arthur Webster, at Victoria, B.C., and to engage with him in the study of the geology of the west coast of Vancouver island. I reached Victoria on June 7, and Mr. Webster came over from Vancouver on the 18th. The intervening time was occupied in gathering information from mining men, prospectors, and others, in regard to the region to be examined; in collecting from the government offices, and in studying all the maps and literature available relating to surveys on the west coast, and in examining the crystalline rocks and the superficial deposits of the south and east borders of the Victorian peninsula from Esquimalt to Telegraph cove.

On June 21, our party left Victoria with camping outfit, and after about three weeks spent in the Metchosin and Sooke districts, returned to Victoria on July 11.

Dense covering of vegetation.

Fairly good roads intersect these districts, and outcrops of crystalline rocks are abundant. Away from the highways, particularly near the coast, the country is exceedingly difficult to traverse. The surface is rough and broken, and the minor inequalities are concealed beneath a dense coating of vegetation wherever the smallest accumulation of soil makes rooting possible.

Deep and almost impassable gullies and abrupt faces of solid rock confront the explorer at almost every turn. Huge standing trees and fallen trunks, which often serve as natural bridges to the ravines, form with their interlacing branches additional obstacles, and with a dense undergrowth frequently higher than the line of vision, geological investigation becomes wholly secondary to the problem of progression.

On turning to the sea coast, the difficulties are scarcely less formidable. Vertical bluffs, intersected by deep gullies, face the waters of the straits along much of the coast, and stretches of level shore are so rare that the pedestrian may occupy hours in advancing an insignificant distance, Character of the sea-coast.

The experiences of the few days spent in attempts to do geological work from the land led to the conviction that examination from the water by boat or canoe was the only method by which satisfactory progress could be made. The Indians too were found to be unreliable, in regard to keeping appointments, if their immediate necessities chanced to have been relieved by the capture of a salmon between the times of agreement and fulfilment. Moreover, as they were reported to be mostly absent from their villages farther up the coast, and engaged either in the Behring Sea sealing or the Fraser River salmon fishing, it was deemed advisable to leave Victoria with an outfit that would allow of regular prosecution of work independent of native assistance.

In pursuance of this plan, on returning to Victoria, a nineteen-foot sealing boat was purchased and provisions for from two to three months were added to the previous outfit. The wisdom of this plan was abundantly demonstrated during the remainder of the season and, with slight exceptions, for the particular work in hand the outfit served every purpose. Examination by open boat.

The Pacific coast of Vancouver island, called locally the West Coast forms a broad and regular curve, convex towards the ocean. Its length from Race Island lighthouse, at the southern extremity, to Cape Scott, its north-western, is 250 miles. A straight line joining these extremities lies in a direction 52° west of north, and along its central portion is about 20 miles from the outer coast line. This outer coast line is broken by the entrances of five deep sounds, all more or less choked with islands, and with finger-like extensions radiating among the adjacent hills. Regarding Port San Juan as another of the major inlets, the coast from Race island to Cape Scott is broken at regular intervals of about 35 miles by deep indentations which from south to north are as follows: Port San Juan, Barclay, Clayoquot, Nootka, Kyuquot and Quatsino sounds. The intervening strips of coast, beyond San Juan at the entrance of the strait of Juan de Fuca, are exposed to the full force of the ground swell from 10,000 miles of open ocean, and a heavy surf pounds ceaselessly upon the rocks. Description of the West Coast.

Since it was difficult and even dangerous to make landings for geological examinations upon these exposed stretches of the coast, and also impossible to cover the whole territory during the season, it was

decided to apportion the time among the principal sounds and make use of the coast steamer in crossing the exposed portions. In pursuance of this plan one week was spent at Port San Juan, twelve days on Barclay sound, nineteen days on Clayoquot and one month on Nootka Sound. Excepting the north side of Barclay sound the entire shores of the above named sounds and their extensions were studied, and, including the portions examined at Victoria and Sooke, a total coast line of 637 miles was gone over during the summer. A large collection of illustrative material was made, including practically every variety of rock met with, and specimens from every important section of the coast. These will furnish material for chemical and microscopical research, which should aid in the elucidation of some of the problems of the field relations of the metamorphic and intrusive series, and the origin of the metalliferous deposits. Kyuquot and Quatsino sounds were not studied, but the latter was examined by Dr. Dawson in 1885, and his description is found in the annual report of the Geological Survey for 1886, page 81 B.

Work done.

At the close of the season, the coast steamer was taken on her monthly trip north, and a passing glimpse was obtained of the remainder of the coast as far as Cape Scott. In returning, our party reached Victoria on September 30.

Physical Features of the Region and their Relation to its Investigation.

That part of Vancouver Island over which geological investigation was prosecuted during the season of 1902 consists of the south-eastern two-thirds of the strip of West coast country, bounded by the Pacific ocean on the south-west and a straight line on the north-east joining Race island and Cape Scott. Its length is 245 miles and average breadth about 12 miles. Its superficial area is approximately 3,000 square miles, and that of the portion studied about 2,000.

Rugged surface.

The surface is extremely rugged and broken. Lofty pinnacled peaks and rounded hills, deep ravines and sharp valleys occupy almost the entire area. Yet, just as the coast line when viewed in a broad way forms an unusually smooth and symmetrical curve, so the elevation of its surface forms a curve even more conspicuously symmetrical than that of the coast line. From Race Island light to Barclay sound the hills gradually increase in elevation from a few hundred to about 3,000 ft.; north-west of Barclay sound the elevation increases, reaching its maximum in the snowy ranges of mountains back of Clayoquot and Nootka sounds. Thence north-westerly the peaks become less lofty, seldom reaching 3,000 ft. beyond Kyuquot except in the Cape Cook peninsula, and gradually becoming less elevated towards

Cape Scott, where the surface becomes rolling and hilly, and in general resembles that of the south-eastern extremity of the island.

Deep inlet.

Another leading feature of the West coast is the presence of the large sounds and their extensions previously mentioned as occurring at almost equal intervals from the entrance of the strait of Juan de Fuca north-westwardly to Cape Scott. The wider central portion of the strip of country above outlined is intricately cut up by these arms of the sea, which are without exception deep and perfectly navigable for the largest kind of vessels. Excepting Alberni canal and extension from Barclay sound and Quatsino sound, which lie almost wholly to the north of the imaginary boundary line above indicated, all of these waterways are practically confined to the strip of coast country under consideration.

Importance of inland waters.

The existence of these sheltered inland waters was of the greatest importance to the work of the season. Their shores between tides form practically uninterrupted exposures of the country rock, and landing is almost always easy and safe. The admiralty charts are so accurate that almost any point can be located with sufficient closeness for geological purposes, and by them the stranger can navigate with confidence.

Away from the immediate shore line, the obstacles to geological investigation were of the same character as those met with in the Sooke district but on a larger scale. Standing and fallen timber, dense undergrowth, steep slopes, ravines and boulder beds form the normal surface of the country. Where large streams enter the sea, as at the heads of all the larger extensions of the sounds, considerable deltas or detrital fans of level ground are built out, and these small areas are the only exceptions, away from the outer coast line, to the rule of a precipitous and rocky character for the surface.

Coastal plain.

From Barclay sound north-westwardly along the open coast, a narrow and interrupted coastal plain borders the sea. It rarely or never exceeds two or three miles in width and occasionally appears to exist only in a fringe of low scattered islands or rocky wave-washed ledges, or is wholly worn away by the vigorous marine erosion.

Methods of examination advised.

The presence of this less elevated border along much of the exposed ocean front, the consequent absence of lofty and inaccessible cliffs facing the ocean, and the existence of extensive sandy or gravelly beaches, greatly diminish the difficulties usually met with in land travel in this region, and examination of these yet unexplored portions is regarded as most feasible by foot travel along the coast. Landing places where the form of the projecting points or outlying ledges breaks

the force of the ocean rollers, are known to the Indians, and in ordinary summer weather the boat and outfit could be sent ahead to such points while the geologist was making the best of his way to the same points on foot. Such a method would obviate the necessity of returning over ground already examined, a matter of much consequence in a country so difficult to traverse. The same plan of progression is wholly out of the question as soon as the open coast is left, from the abruptness with which the land and water meet, but here the absence of the heavy ground swell permits of the more easy and rapid method of examination from a boat.

Coast south-east of Cape Beale.

South-east of Cape Beale the coast is of a somewhat different character. The coastal bench is higher, and the sea is faced by lines of trap and sandstone cliffs. Sand and gravel beaches are rare, and between Cape Beale and Carmanah point the sea appears to break directly against the cliffs for much of the distance. Between Carmanah point and Port San Juan a shelf of wave-washed sandstone, passable under ordinary conditions of tide and weather, lies at the base of the coast cliffs. From San Juan to Race island, crystalline rocks face the sea abruptly, and travel along the shore is impracticable for other than short distances. As a rule, diminution of the ocean swell as the strait is entered, lessens the surf so that landing is possible on this section at almost any point in favourable weather.

Coast between Kyuquot and Quatsino sounds.

Between Kyuquot and Quatsino sounds, the character of the coast was not clearly determinable from the steamer in passing, except along the outer shore of the Cape Cook peninsula. With this exception the general appearance of the country warrants the expectation of no unusual difficulty in its examination. The appearance of the coast about Cape Cook was, however, repellant. Tidal currents, and perhaps the nature of the bottom, greatly increase the ordinary ocean swell, which pours its volumes furiously upon the rocks and ledges in wreaths of spray and vapour. The coastal bench seemed very narrow or wholly absent, and the retreating sides of the peninsula were rugged, lofty and forbidding.

Hardships.

With the possible exceptions above noted, examination of the whole West coast appears practicable by the methods outlined with a minimum amount of difficulty and danger. With such a frail means of transportation as an open boat, with this one indispensable adjunct so frequently in contact with the rocks in the necessarily innumerable landings, with the occasional necessity of landing in more or less surf, with contents subject to injury or complete loss through accidental wetting, it will be easily seen that with every possible preparation of provisions and outfit against accident, with experienced assistance, and with the best of judgment, accidents are continually possible: and in

a sparsely inhabited country where, during the summer season, a boat or canoe, or an inhabited rancherie may not be met with for days or weeks, even a slight physical accident, or an injury to the boat might assume grave importance and imperil, at the least, the results of a season's work.

Amenities.

On the other hand the weather from June until after the middle of September is fine and agreeable. High winds are exceedingly rare, and rains infrequent. Good water is abundant and mosquitoes and flies are seldom troublesome. Game is plentiful and, on Nootka sound, deer were easily shot from the boat when needed. Salmon and cod may be taken by trolling, and trout are found in the streams. Ducks are abundant in the creek-mouths, and berries are found in profusion at every camping place. Added to all this is magnificent and inspiring scenery, a temperature that does not enervate, an exhilarating air, fresh from half a world of open ocean, some of the most stupendous exhibitions of the results of geological forces, and ever new and interesting scientific problems.

Geology.

Previous study limited.

Excepting the examination by Dr. Dawson of the northern portion of the coast from Cape Scott to Quatsino sound and the briefer studies of the sediments regarded as possibly coal-bearing, which form a more or less interrupted strip along the north-east side of the strait of Juan de Fuca, little or no critical study seems to have been given to the West coast rocks.

Exclusive of the unconsolidated superficial deposits of Quaternary age, rocks of at least four different periods occur. Two of these series are crystalline, two are consolidated but otherwise almost unaltered sediments.

Metamorphic Series.

Distribution.

The oldest of these rock series occupies, almost exclusively, the whole region over which investigations were prosecuted during the season of 1902. The only exceptions worthy of mention are the small areas of typical intrusive rocks, and a narrow coastal fringe of unaltered sediments along the entrance to the strait of Juan de Fuca. The rocks of this series, wherever examined, were highly metamorphosed. As a rule, the alteration is a complete recrystallization of the original constituents. Schistose structure is often present and when very prominent, as in the San Juan area, appears to be connected with a less extreme alteration. Its obscurity or absence came to be regarded as due to more complete fusion and recrystallization.

Schists.

Locally the metamorphic series varies widely in composition, texture and structure. In composition these rocks range from non-calcareous, dark coloured, basic rocks, to light coloured, almost pure quartz rocks. Massive crystalline limestones are frequently intermingled with them. Occasionally the limestones show gradations upwards or downwards, by means of passage beds becoming increasingly argillaceous or siliceous, to the non-calcareous rocks. More often no transition is visible, the contacts being sharply defined. In the majority of cases the sharp contacts were plainly due to intrusion of an igneous rock. In one case beyond the possibility of doubt the limestone was a sedimentary deposit upon the vesicular surface of a lava flow.

Crystalline limestone.

The mineral constituents are as variable as the average chemical composition. Almost pure granular quartz rocks occur, often with intimately disseminated fine grains of pyrites. These range by increasing admixtures of clay to the quartz and mica schists, argillites and slates. Pure calcium carbonate rocks occur, now almost always completely crystalline, forming white marbles, and by the addition of various impurities producing coloured and variegated varieties, dark to black limestones, and a wide series of more or less calcareous rocks. Associated with all these and belonging to the same series is a range of more or less feldspathic and hornblendic, well crystallized rocks, generally dark in colour and basic in composition, but rarely light coloured, with free quartz and acid feldspars predominating. In addition are fine-grained and compact rocks in which the minerals can not be identified in the hand specimens. These dark coloured basic rocks are frequently amygdaloidal, the amygdules usually filled with quartz and epidote, and the latter mineral is a conspicuous accompaniment of rocks of this character.

Amygdaloids.

The texture ranges from a fine grain without discernible crystal faces to well crystallized masses showing cleavage faces an inch and more in diameter. No glassy rocks were seen, although this character would doubtless be revealed by a microscopic examination of some of the less altered volcanic rocks. Flow structure in felsitic rocks was frequently noticed, particularly about the northern extensions of Nootka sound. Bedding is not infrequently shown, and is the one distinctive characteristic separating the rocks of this series from the intrusives which they often closely resemble. In some portions it shows the alternations and associations of ordinary aqueous stratification. In other portions it is the more or less massive and irregular layering of successive lava flows.

Flowstructure and bedding.

With the possible exception of the slates, schists and traps, between Port San Juan and Sooke basin, in all the region examined none of the bedded portions was sufficiently unbroken and continuous to jus-

Paucity of bedded rocks.

tify an attempt at measurement, or scarcely an approximate estimate of their thickness. The identification of particular horizons in the series has also failed for the same reason, and from the obliteration of the original features that might have served that purpose.

From the geographical extent of these rocks, their moderately high dips wherever the bedding is shown, and the troughs 3,000 to 4,000 feet in depth visibly excavated in their substance, the conviction arises that the thickness of the series must be very great.

Their intricacy.

In mapping the distribution of this series it often becomes a matter of great difficulty to decide whether the rock in question should be classed with the metamorphic, or with the intrusive series. Where stratification is present, even though it is only the massive bedding of volcanic rocks, there is no doubt. But when this is wholly wanting, the problem becomes a difficult one. The importance of this question, and the frequent necessity for passing judgment on critical cases, led to a close search for criteria apart from stratification that would serve when this characteristic was wanting. Towards the end of the season from repeated observations of many typical occurrences of both metamorphic and intrusive rocks, certain criteria were obtained that are believed to furnish tests by which these series can almost always be separated. The accurate delineation of their boundaries may be of considerable economic importance, as the metamorphic rocks frequently contain ore bodies which by some are regarded as original constituents of the sedimentary or volcanic rocks and not to be looked for in the intrusive series.

Relation to ores.

Fossils.

Although fossils were carefully searched for wherever the condition of the rocks warranted the slightest expectation of their occurrence, nothing of any palæontological value was obtained from this series. The limestones of Barclay sound near the entrance of Alberni canal, furnished some poorly preserved organic remains, but no other locality yielded even obscure fossils. Fossiliferous limestone was reported to occur near Sechart in this vicinity, but the locality was not visited.

Dr. Dawson's descriptions.

Dr. Dawson's descriptions of the metamorphic rocks of the northern and eastern portions of the island apply with such exactness to this series of the West coast, that there can be no reasonable doubt of the latter being a continuation of the former. They may thus be considered as belonging to his Vancouver series and mainly of Triasssic but possibly, in their lower portions, of Carboniferous age.

Vancouver series.

The folding and metamorphism of such a vast series of deposits variable in composition, has given rise to rocks that present the widest divergence in point of resistance to denuding agencies. The

result is a deeply incased surface of bewildering irregularity. Up to levels of about 3,000 feet this irregularity has had its sharpness smoothed but its hollows deepened and accentuated by glacial agencies. Above that level the peaks are pinnacled and jagged.

Intrusive Series.

Dykes and sheets.

Rock masses, intrusive in character, are widely and abundantly distributed throughout the territory previously described. Many of these are dykes and sheets, which form in different localities relatively varying but usually small proportions of the whole mass. In composition they vary from dark-coloured basic rocks to light-coloured acid varieties. The basic dykes are most numerous and are believed to be connected with the volcanic masses that form so large a portion of the Vancouver series, and do not call for separate classification in a broad and general outline of the geology. The acid intrusives of this type are in some cases visibly connected with the second group of rocks, to be described. In many other cases they are so near such masses that their origin is not much less certain. For these reasons they may be treated with the intrusive series to which they are so closely related.

Acid intrusives.

Areas of intrusive rocks.

Excepting these occurrences, the areas of unmixed intrusive rocks within the region under discussion are neither large nor numerous. They form both shores of Alberni canal for about six miles northward from the mouth of Nahmint river. A band of varying width is crossed by both of the northward extensions of Kennedy lake, by Tofino inlet and Fortune channel, and occurs in a few small islands near the shore at the northern entrance to Deep pass. From the trend of this band it may be expected to form the north side of Meares and possibly of Vargas islands, but their shores were not examined. The granite area of Alberni canal lies in the line and may be a continuation of the Clayoquot Sound band. If so, it should be crossed by Anderson lake and Effingham inlet, neither of which was visited. Other small areas of similar rocks occur on Shelter arm and Sydney inlet, on Muchalât, Tlupana and Port Eliza arms, and Esperanza inlet, in the Nootka Sound district.

Process of fusion and metamorphism.

Dr. Dawson's description of the contact of these rocks with the Vancouver series on the eastern side of the island agrees perfectly with the contacts frequently observed upon the West coast. The process interrupted by solidification has been one of fusion and incorporation of the metamorphic rocks into the acid magma. The series in which this process was operative is of variable thickness, and frequently

shows all its stages. The angular fragments, in passing out or downwards into the acid rocks, become more separated, lose their angularity, and often pass into irregular sheets, producing a schistose lamination of the blending masses. Considerable areas of these mixed rocks of the contact zone are often met with apart from any visible masses of the intrusive series, and point to the existence of underlying masses of the acid rock, which denudation has not yet revealed.

Granitoid rocks.

The typical intrusive areas are made up of light to dark gray rocks, coarsely crystalline in texture even at their contacts. The essential minerals of granite, excepting muscovite, make up the largest portion of the constituents, but their relative proportions are variable. Hornblende is almost invariably present, and usually in great abundance. The rocks of this series are massive, and much less broken and shattered than the metamorphic rocks. Schistose structure is often traceable, occasionally producing rocks that may be termed gneiss.

Gneiss.

The origin of the rock matter of the intrusive series is almost wholly problematical. The absence of the older rocks upon which the Vancouver series began to be deposited necessitates the conclusion that this substance is, at least, incorporated in the underlying and now intrusive masses.

Copper ores with granites.

Small areas of granite rocks approaching in composition the typical intrusive series above described, occur near Victoria and in the Sooke district. At East Sooke the copper ores appear to be associated with them. When these areas were first studied, the rocks were all regarded as massive igneous, when they were completely and coarsely crystalline, and schistose structure was absent. As a wider knowledge was obtained of the field characteristics and relations of both series of crystalline rocks, more and more of the massive rocks were regarded as altered sedimentary and volcanic masses. Near the end of the season, by the use of the criteria previously alluded to, rocks which in the hand specimen or in field masses showed no trace of stratification or of schistosity, but presented the usual characteristics of plutonic igneous rocks, were unhesitatingly classed with the metamorphic series. The observations of the season thus produced a complete change of opinion in regard to a large portion of the crystalline rocks of the island. Because of these considerations, and the incomplete study of the areas above mentioned, the data obtained are insufficient to warrant a decision on their geological position.

Cretaceous Series.

Unaltered sediments.

The older series of unaltered sediments occur along Quatsino sound and are touched by the head waters of Alberni canal. They were not

Carbonaceous shales.

identified elsewhere within the district examined. The former areas have been described by Dr. Dawson and the latter by Mr. Richardson. Plant remains were found in concretionary masses of the dark brown and black shales at New Alberni, but no effort was made to trace the continuation of these rocks.

Tertiary Series.

Search for coal.

The newer series of consolidated but otherwise unaltered sediments have little in their general appearance to distinguish them from the older Cretaceous sediments, and in consequence have been frequently prospected for the bituminous coal beds that characterize that series. These rocks form a narrow and interrupted marginal band along the strait of Juan de Fuca and a few isolated coastal areas farther to the north-west.

Conglomerate overlaid by sandstone.

The basal beds are generally of conglomerate, largely derived from the rocks of the Vancouver series, upon which they rest without disturbance. These coarse basal beds are of variable thickness, ranging ordinarily between 50 and 100 feet. The upper portions are interspersed with beds of sandstone, which at length wholly replace the conglomerate and add 50 or 100 feet to the total observable thickness. The most continuous area of these rocks, extending north-westerly from Port San Juan to and beyond Carmanah point was not examined, except near the former locality, and the aggregate thickness may be greater in this area. At Coal creek, in the Sooke district, richly fossiliferous layers occur in the upper sandstones. Plant remains frequently accompany the shells, and the whole series consists of beach and shallow water deposits.

Fossil-plants and shells.

In the Coal creek area, and at Sooke, the consolidated and sometimes concretionary sandstones and conglomerates are overlaid by unconsolidated sands and gravels, and by boulder-clay. These later deposits rest unconformably upon the smoothed surface of the sandstone. Just west of Coal creek, trap rocks come through the basal conglomerates, and the upper surfaces of trap boulders of this conglomerate, still in place in the tough matrix, are striated in a direction parallel with the striae on the exposed surface of the trap beds. The glaciation of the surface of the trap rock does not pass under the conglomerate, but disappears at the line of contact, and the underlying surface there shows the characteristic features of marine erosion. From these observations we can conclude that this series of beds had been deposited, and the portions now visible had reached an advanced stage of consolidation before the end of the glacial period. The indications are also

Traps.

Glacial striæ.

that the ice of that period was a prominent factor in the denudation that has removed from the borders of the strait all but a few small areas in the re-entrant angles of the coast line. These observations in the field are, therefore, in general accord with the conclusions reached by Mr. Merriam on palæontological evidence.*

Quaternary Deposits.

Throughout the region covered by the season's explorations, unconsolidated superficial deposits of glacial or recent age are exceptional occurrences. Almost everywhere the underlying crystalline rocks are bare, or but thinly covered by a coating that can scarcely be called soil, yet offers a foothold for a luxuriant growth of vegetation. Within the entrance to the strait of Juan de Fuca, considerable thicknesses of boulder clay, and associated sands and gravels, appear overlying the Tertiary deposits of Coal creek and West Sooke. These lie in somewhat sheltered positions out of the direct line of glacial movement. Generally in this vicinity as well as further to the north-west, the surface is swept clean of deposits, while the contours show heavy glaciation. The materials necessarily removed from the land surface by this process are not now visible, but the charts give some evidence of their occurrence below sea-level. Unconsolidated deposits.

Glacial action appears to have been an unusually large factor in the development of the topographic features of the region. The remarkable systems of canals and inlets radiating from the large sounds are old glacier beds, and their great depths are almost certainly due to ice erosion. In contrast with their occurrence and general direction at right angles to the coast north of the entrance to the strait is the remarkably smooth and almost unbroken coast line along the strait, which, like the canals farther north, was a glacial channel but of far greater magnitude. Some evidence from the glaciation of rock surfaces was obtained that points to two periods of glaciation. Traces of the earlier and more extensive ice sheet remain only in the rounded contours beyond the outer limits of the freshly striated surfaces left by the later one. Similar evidence ought to be found on the elevations, which are rounded and smoothed up to and above 3,000 feet, but were not critically examined. Glacial action. Two period of glaciation.

Additional data derived from a study of the charts, when combined with the season's observations, appear to warrant the following conclusions. The submarine coastal shelf has been developed by a process Conclusions.

* Note on Two Tertiary Faunæ from the Rocks of the Southern Coast of Vancouver Island. Bull. Dept. of Geology, University of California. Vol. 2, No. 3, pp. 101–108, 1896.

that has been in operation from a time long anterior to the glacial period. Cape Flattery probably marks the southern limit of glacial action upon the Pacific coast line of North America. The earlier and greater ice sheet crossed the present coast line of Vancouver island, and reached out several miles upon the coastal shelf. The limit of the later ice sheet was within the coast line south of Clayoquot sound, but reached that line on Nootka sound. The ice erosion that so conspicuously scoured and furrowed the present land surface operated very lightly on the coastal shelf. It is believed that the period of extreme glaciation was not one of much, if any, elevation above the present level, since those glaciers that did reach out upon, or (as in the case of the great strait glacier) did possibly cross, the coastal shelf, would have excavated deeper furrows in its surface.

Recent marine deposits and old shore lines.

Recent marine deposits assume some importance in the immediate vicinity of Victoria, where they occur about 30 or 40 feet above high tide. At Friendly cove, on Nootka island, the Indian village is built on recent beach-deposits of about the same elevation, and sea-worn caves, now choked with shrubs, occur above the level of the highest tides a few miles farther west. Borings of mollusks were traced up to about the same level, becoming more weathered and obscure towards their upper limit. Similar borings were also noticed in the sandstone at Tatchu point, and indicate a moderate elevation in comparatively modern times. Above this old shore line, with the exception of the Tertiary shelf previously mentioned, no benches were traceable on the slopes of the hills. Small deltas, partly overflowed by the highest tides, occupy the heads of all the deep inlets, and fans of coarse detritus front the entrances of all considerable streams along their sides. They are the most recent of the deposits and their construction it still in progress.

Economic Considerations.

Timber scarce.

The natural resources of the West coast of Vancouver island are almost wholly undeveloped. The timber visible from the coast is scarcely sufficient to warrant any expectation of its ever forming the basis of a large industry. Small areas of good timber usually occur on the deltas at the stream mouths, and in some cases appear to continue for some distance up the valley bottoms. The area that seemed to offer the best outlook was that of the San Juan valley, which is two or three miles in width and runs back several miles. A lumber camp was established in this vicinity late in the summer, and operations were reported to have begun upon a considerably larger scale than heretofore. About Barclay, Clayoquot, and Nootka sounds the surface of the

country is so broken, and the stream valleys so narrow that large and accessible timber areas are not to be expected. South of Kennedy lake a considerable area of more level land may prove one exception to the general rule.

Salmon fisheries.

The fishing industry of the West coast gives far greater promise than the lumbering. Only one salmon cannery, at the entrance to Kennedy lake, is at present in operation on this whole coast. A second was in operation for a time on Muchalât arm but was abandoned because of lack of fish. Under the present laws relating to methods of fishing, this branch of the industry gives little prospect of development. Salmon occur, however, in all the coast waters in considerable abundance, and the great numbers that annually resort to the Fraser and other adjacent mainland streams are believed to come up the strait of Juan de Fuca along the Vancouver Island coast. Consequently the recent proposal to permit the use of set traps, in addition to the present drift net methods for their capture, resulted in a wild rush to secure locations and every favourable and accessible stretch of shore between San Juan and Race island was staked for this purpose at the earliest lawful date. The future prospects for this method of fishing in all the large inlets farther north is regarded as very promising. Should trap fishing become lawful on the Canadian, as it already is on the United States side of the boundary line, salmon canning on the West coast may become a large and profitable industry

Use of set traps.

Deep sea fisheries.

Very little attention is at present given to the deep sea fisheries of British Columbia. With the increase of population in the central and western portions of the continent, and development of transportation facilities, the demand for this cheap and wholesome food product must become large, and bring about the establishment of fishing villages in the numerous good harbours of the coast.

Mineral resources.

Any immediate or early advance in wealth and industry on the West coast is dependent on its mineral resources. Although the country is still largely unexplored, what is known of the rocks and their associated ores, gives rise to a firm belief in their great value and future possibilities. With respect to their mineral contents, the west coast rocks may be considered in three groups—the crystalline rocks, the consolidated sediments, and the superficial deposits.

Ores of the crystalline rocks.

As has been previously stated, the crystalline rocks occupy nearly the whole of the land surface of the West coast country. The great thickness of these rocks, their diversity of composition and origin, the extreme geological forces to which they have been subjected, their

broken and faulted condition, and the extent to which they have been cut by intrusive dykes, sheets, and plutonic masses, are all features regarded as favourable for the occurrence in them of valuable and extensive ore deposits. The navigable inland waters are also highly favourable to the cheap transportation of both supplies and products.

Actual occurrences of ores in these rocks have already been reported from localities too numerous to mention, and a few of these, upon which some work has been done or was in progress, were visited. Brief examinations, and series of specimens illustrating the ore, gangue, and associated rocks, were made at East Sooke, Newton's camp on the Gordon river at San Juan, the Happy John group of claims near the entrance of Alberni canal, and Copper island on Barclay sound.

Iron and copper ores.

The usual sulphides of iron and of copper and iron, in a hornblende gangue, occur at the Blue Bird claim at East Sooke, the whole immediately associated with masssive crystalline rocks, occasionally of very coarse texture. Three or four miles farther south near the outer shore of the East Sooke peninsula, deposits of magnetite occur, with varying amounts of the above named sulphides, associated with what were regarded as the metamorphic rocks. Disseminated particles of pyrite and chalcopyrite are here widely distributed. They occur as constituents of the country rock, as well as in veins and joints. Specks of native copper were also occasionally observable on the joint surfaces.

Native copper.

At Newton's camp on the Gordon river the work was stated to be wholly of the nature of development. Although the ore body was not cut by the shaft that was then being put down, and had reached about 300 feet, magnetite was a common constituent of the crystalline rocks on the dump. The surface outcrop of the ore body was not seen. The rocks along the trail and visible at intervals are of the metamorphic series, and considerable masses of limestone occur in the vicinity.

Alberni canal.

Several groups of claims are located on the north side of Alberni canal near its entrance. Considerable development work was reported to have been done on the Monitor and Hayes groups and some ore shipped. No work was in progress at the time of our visit and only one of the occurrences of the vicinity was examined. The ore at this claim—the Happy John—was a chalcopyrite associated with limestones which were closely intermixed with dioritic rocks. On Copper island, a few miles to the south-west, the ore is a magnetite associated with dioritic rocks. Limestones occur in the vicinity and the ore-bearing rocks appear to belong to the metamorphic series. Other deposits of

magnetic iron in this vicinity are reported from the Sarita River valley and from Sechart.

Further examination desirable.

A closer and more continued study of these and other occurrences is much to be desired, as, until more accurate and complete knowledge is possessed of some typical occurrences and their field relations, the possibilities and probabilities of discoveries in rocks of other localities are largely matters of chance. Copper island is regarded as one favourable locality for such study of the magnetic iron ores. The coast of the island offers an exposure completely surrounding the area, and a large portion of the surface near the deposit is bare of vegetation.

Nootka sound.

Similar rocks and associated ores occur on Clayoquot and Nootka sounds, and the highest expectations are held that some of the known, and others yet unknown occurrences, will prove extensive and valuable.

Ores of the consolidated sediments.

The consolidated sediments of the West coast can scarcely furnish any contribution to the mineral resources of the country. It is possibly otherwise with the area of these rocks about the head of Alberni canal. If this area should be found to contain workable coal beds of considerable extent, the conditions would probably be highly favourable for the establishment of a great industry at that point. With abundant iron ores on Barclay sound and limestone in unlimited quantity immediately upon the water front at the entrance of the canal, and the canal itself forming an ideal highway for water transportation, such a discovery would apparently make up a rare combination of advantages for the economical production of iron. Should the quality and quantity of the Barclay Sound iron ores fulfil the sanguine expectations of the present owners, it does not seem at all unlikely that Alberni may become the seat of such an industry, as coal occurs not far distant in the Nanaimo and Comox fields, and the intervening country offers no great engineering difficulties to railroad transportation.

Coal.

Ores of recent deposits.

Pleistocene and recent deposits are of such limited extent upon the West coast that they cannot add much to the mineral wealth of the country. The beach sands of Wreck bay, between Barclay and Clayoquot sounds, have yielded some gold, and this is said to have been derived from the superficial deposits immediately to the rear of the beach. With limited exceptions, however, the ice of the glacial period swept off beyond the present shore-line the loose surface materials that had been accumulated previously to its advent, and with them a considerable thickness of the rock upon which they rested, thus eliminating almost all possibility of the occurrence of placer deposits of any extent along the coast.

No gold.

Conclusion.

The field observations of the present summer have probably brought under notice every geological formation of any importance that occurs on the coast, and in part have established their relations. On the other hand, the examinations of the separated areas were not connected, the difficulty in penetrating the country and want of time forbade the tracing of outcrops or contacts of any formations away from the shore, and the rocks being mainly crystalline, closer study by chemical and microscopical methods should supplement the field examination. Because of these considerations the conclusions reached need not be regarded as final. Still, it is thought best to state them, along with the recorded observations, as more or less probable working hypotheses suggesting and stimulating further investigations.

Preliminary Report on the Boundary Creek District, British Columbia.

Mr. R. W. Brock.

Introduction.

On May 29, I left Ottawa with instructions to first make a detailed survey of the Boundary Creek district, and then to make a reconnaissance survey of the West fork of the Kettle river. I was accompanied by Mr. W. H. Boyd, of this office, who took charge of the topographical branch of the work. Greenwood, as the central town of the district, was selected as headquarters for the season. The area embraced in the Boundary Creek map-sheet is that lying north of the International boundary line and south of Pass and Lost creeks, between the North fork of the Kettle river, and a line from a little west of Midway north between Copper and West Copper camps. Within this area lie all the mining camps of the Boundary Creek district at present being worked or opened up. The work was done in sufficient detail to enable an accurate map, on a scale of one mile to the inch to be constructed. The uniform elevation of the mountains, the frequent forest growth on their summits and the irregularities in the topography made it necessary to take a very great many transit stations. The intricate mixture of many different rocks of different ages made the geological work difficult and slow, so that more time was consumed in the survey of the sheet than had been anticipated. The seasan was hot and dry. In the latter part of August the daily range of temperature was very great, extremely hot days succeeding frosty nights. Just before completing the map sheet, toward the latter

part of August, the sun proved too much for me and I was ordered home by the doctor. This made the intended reconnaissance survey of the West fork of the Kettle river impossible. I remained in camp, however, to look after the completion of the geological work on the Boundary Creek sheet, returning to Ottawa on Sept. 22. Mr. Boyd remained in the field two weeks longer to complete the topographical data.

The Topographical Map.

The method employed by Mr. Boyd in the topographical work was triangulation by means of numerous transit stations, with careful sketches drawn to vertical and horizontal scale, commencing from a base surveyed along the railway spur on the midway prairie. This triangulation was tied on to the International boundary monuments, to mineral monuments and to stations used in the West Kootenay sheet east of the North fork of the Kettle river.

The triangulation was supplemented by numerous road and trail odometer and paced surveys between fixed points, using prismatic compass and aneroid barometer. Similar traverses were made of numerous ridges and valleys. With the exception of some of the traverses, all the topographical work was done by Mr. Boyd. He also rendered material assistance in the completion of the geological work after my illness.

A reconnaissance survey of part of the district was made last year, and its general characters are described in the Summary Report for the year.*

Physiographical Features.

The area covered by the Boundary Creek sheet possesses the characters of an older mountain district. The mountains have been worn down below the limit of intense Alpine erosion and appear as rounded ridges or dome-shaped summits of a rather uniform elevation of about 5,000 ft. The uniformity in elevation of the mountains cannot here be taken as indicating that the country is a dissected peneplain.

Plain of erosion.

It is due to the wearing down of Alpine peaks by erosion. Above the tree line when frosty nights succeed hot summer days and the rocks are unprotected by soil or vegetation, the erosion is intense and the mountains wear down rapidly. As soon as a ridge or mountain is cut down to the base of this zone of rapid erosion, its degradation

* Summary Report of the Geol. Survey for the year 1901, pages 49-67.

becomes very much slower, while the peaks still standing in this zone continue to be heavily attacked so that they are in turn cut down to the base before the former have retreated much below it. Consequently about tree line and for some distance below it, the mountains and ridges may possess a rather uniform elevation, as is the case in the present map-sheet. But while the regularity in form or elevation is mainly due to erosion, it is in part due to the filling up of old irregularities in the surface by the Tertiary lavas which once covered the entire surface of the sheet and which still may be found capping many of the ridges or frozen to their flanks. Glacial erosion may also have been effective in reducing inequalities in the surface relief. The valleys form a well marked longitudinal and transverse system. The North fork of the Kettle river and Boundary creek are longitudinal valleys. The transverse valleys are off-sets from these. The valley of the main Kettle river which merely touches the S. W. and S. E. corners of the sheet, forms in this part of its course an important exception, running across the general trend of the mountain ranges and primary valleys.

The west arm of Kootenay lake and the river from it to the Columbia in the West Kootenay map-sheet furnish an illustration of a similar irregularity. While in general the structure, form and elevation of the mountains are regular, in detail they are more or less complex and irregular. Owing to differences in the resistance of different rocks to the agents of erosion, the ridges are often notched or rise into elevations, breaking the regularity of the distribution of summits. There have been important changes in the drainage, brought about by one stream eroding backward and capturing waters of another, and in other ways. Probably the chief factors in these changes have been the Cordilleran glacier which scoured this country and local remnants of it, though it is often difficult to say just what has resulted from ordinary river erosion, what from glacial erosion and what from differential uplifts. The most obvious effects of glacial erosion have been the straightening of valleys, with a tendency to produce longitudinal valleys (these have the general course of the glacier), the alteration of the V-shaped valley to the wide U-shaped valley, and the truncation of the ends of ridges between adjoining transverse valleys. The glacier also deepened the main valleys. The deepening of these main valleys, coupled with the truncation of the ends of spurs separating lateral valleys has produced many hanging valleys. That is the beds of many of the transverse valleys are high above the floor of the trunk valleys, so that the streams occupying them debouch in waterfalls or have been forced to cut canyons down to the level of the trunk

Modification through glaciation.

Hanging valleys.

stream. The little tributaries of the North fork of the Kettle from the west almost all occupy lofty hanging valleys.

The bottom of Boundary Creek valley is considerably above that of the main Kettle river, so the creek is cutting a canyon back from its mouth. Boundary Falls is at the head of this canyon.

The character of these valleys while not so marked as in the main valleys of West Kootenay, is still distinctly fiord-like, and this character is to be attributed to glaciation. In the case of many of the creeks a narrow canyon-like trough has been cut in the widened valley bottom since the ice vacated it. Brown creek, in whose valley a great deal of glacial material has been deposited, has cut its trough, not in the deepest part of the rock bottom, but along the north side of the valley.

The creeks occupying hanging valleys have generally built up alluvial fans where they discharge into the deeper valleys. A good example of such a cone of dejection is seen in Eholt Creek valley where the torrent from Long lake enters. As examples of changes in the drainage due to the combined efforts of ice and river erosion, Long lake and the North fork of the Kettle may be mentioned. The North fork, even in post-glacial times, flowed west of Observation hill, as pointed out in the Summary Report for 1900. A small lake occupies a portion of its old channel and the depression of its bed on the Grand Prairie flat west of the town of Columbia can be distinctly traced. At present it flows east of Observation hill. The glacier probably cut down the neck of rock joining Observation hill to the mountains to the east in a sufficient degree to permit river erosion to do the rest. Long lake formerly discharged into Pass creek. A saddle-shaped ridge probably divided Pass Creek waters from the Eholt slope. This the glacier cut down to a wide, almost level col. A deposit of gravel probably morainic on the Pass Creek slope caused Long lake to form. At first it discharged down Pass creek, but a small tributary of Eholt creek by headward erosion tapped it and reduced its level slightly so that now it forms a part of the drainage system of Eholt creek. The lake is deepest near its Pass creek end (a little over 64 feet), is separated from Pass creek by the gravel deposit which is about twenty feet higher than the lake level and sloped towards Pass creek. Marshes occur on it which still drain into Pass creek. Numerous examples might be cited of drainage alteration but these will be discussed in the general report.

Changes in drainage.

The gradient of the main valleys is low, except where they empty into a more deeply trenched valley. The transverse valleys are

usually steep at the head, of low gradient along the middle reaches, and very steep again as they near the trunk valley.

Glaciation.

Other evidences of glaciation beside the form of the valleys are to be seen everywhere. Erratic boulders are perched on the sides and summits of the mountains. Often, for example, granite boulders of great dimensions are to be found lying on volcanic rocks. In many cases the ice has carried them across wide and deep valleys. Some must have been transported a great distance but the majority can be traced to their origin, not many miles from their present position. They have as a rule travelled a little east of south. Polishing and scoring by the glacier are to be seen in many places, sometimes even on the ore bodies. The direction of the ice movement as shown by the striation on polished surfaces of the rocks, is influenced by the local topography, the ice having a tendency to move in the direction of the principal valleys. On the summits of ridges and mountains, it shows greater independence. It varies from S. 15° W. to S. 41° E. An average of a great number of readings gives S. 18 E. as the general direction of flowage. (These readings are astronomic—the magnetic variation is 24°.) The ice sheet which covered this part of the country was no doubt part of the Cordilleran glacier which was shown by Dr. Dawson to have travelled in a direction of S. 30 E. in the Kamloops district,* and which has been proved to have had a similar course over the Kootenay district.†

Boulder clay was not observed in the Boundary Creek district but resorted glacial material is widespread. It is frequently found as terraces of gravel, sand, silt and beds of clay skirting the hill sides along the main valleys. In favourable locations the terraces may extend to a height of at least 2,000 feet above the valleys. Good examples of these terraces may be seen on Boundary creek and the Kettle valleys.

On the hill west of Boundary creek near its mouth, terraces extend almost to the summit of the hill; at least fourteen are plainly visible.

Drift and wash cover a large part of the district, the rocks to a large extent protruding as knees and elbows.

Ranch lands.

The terrace flats on Boundary and the Kettle valleys afford good ranch lands, though irrigation is sometimes necessary. For this purpose the numerous streams are valuable. The open hill-sides, which are not infrequent, afford good grazing ranges.

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* Annual Report Geol. Surv. Can. 1894, Part B. †Summary Reports, 1898-9-1900.

The northern slopes of the mountains and the narrow valleys, are generally well wooded, except where they have suffered from forest fires. Southern slopes are often open and grassy.

Eastern and western slopes may be forested, park-like or open. The main Kettle valley is for the most part open prairie. The south-west corner of the district is more open than the remainder. The northern part, where the mountains are rising to more rugged peaks, is for the most part tree-covered. Forest.

The tendency is for narrower valleys, or summits to be wooded and the hill-sides to be open, owing to the greater precipitation on the summits, and the irrigation by streams in the valleys.

Timber for mining is usually to be had in the vicinity of the mines. Larch, hemlock, firs, spruce and pines are the most abundant trees. The open hill-sides support a luxurious growth of bunch grass. Near Midway the climate is somewhat drier and sage brush, prickly pears, and sand roses make their appearance. The vegetation as a whole is similar to that of West Kootenay outlined in the Summary Report for 1900.

SOLID GEOLOGY.

While for a mountainous district travelling is easy, prospecting and geological work is made difficult by the extreme variety and complexity of the rock formations and the widespread covering of wash. Sedimentary, pyroclastic, igneous, both plutonic and volcanic, and metamorphic rocks all occur, of from possibly pre-Palæozoic to Middle Tertiary ages.

The geological formations met in the district, and their approximate or relative ages in descending order, are as follows :

Glacial and recent deposits.

	Formations represented.
Tertiary.	Volcanic flows, andesites, basalts, &c. Injections of intrusive sheets, dykes and plutonic masses. Ore deposits, volcanic flows. Tuffs, ash beds, volcanic conglomerates, sandstone and shales with a little lignite.
Jurassic ?	Granodiorite.
Post-Palæozoic ?	Serpentine. Green porphyrite.
Palæozoic ?	Green porphyrite. Volcanic conglomerates, tuffs, ash beds with arenaceous limestone. Serpentine. Limestones, argillites, quartzite.

Crystalline schists ? Gneisses and schists.

Except the Tertiary tuffs, sandstones and shales, which yield a few obscure forms, none of the rocks are fossiliferous, so that the geological ages as here given are subject to revision. They have been determined by stratigraphical relationships and the striking resemblances of the lithological units to those found in the Rossland and Kamloops districts, where their geological horizons have been fixed by palæontological evidence.

The crystalline schists.

The oldest rocks of the district are the crystalline schists and the sedimentary rocks. In the south-east corner, a limited amount of crystalline mica and hornblende schists with interbedded crystalline limestones are exposed. These rocks have a strong lithological resemblance to the Archæan rocks of the Shuswap series, and are the oldest rocks found in area covered by the present map-sheet, but they may possibly be more highly metamorphosed argillites and limestones such as are found elsewhere in this district.

Limestone and argillite.

The limestones, argillites and quartzite, cut by serpentines, form a series which closely resemble the Cache Creek series (Carboniferous) of the Kamloops district. They occur in areas of greater or less extent in almost all parts of the district. They are always more or less metamorphosed; the limestone is generally white and crystalline, although occasionally a core of black or drab limestone is to be seen; the argillites are or were somewhat carbonaceous but are frequently altered. A hornblende or mica schist found in the Long Lake region seems to be an alteration form. Frequently both the limestone and argillites are altered by silicification which, when complete, produces a quartzite-like rock. In the argillites, quartz films and bands are often found parallel to the fissility. Some apparently true quartzites occur. The rocks also show the effects of mechanical deformation. The limestone is in places brecciated. These sedimentary rocks are among the oldest in the district. They are cut and greatly disturbed by the later intrusions of eruptive rocks so that little can now be determined regarding their thickness and original stratigraphical relationships. They seldom form large continuous bands but generally appear as islands of greater or less extent in the intrusive rocks. They probably form parts of a once extensive series of sediments which covered southern British Columbia.

Serpentine.

The serpentine occurs as bands and masses cutting these sedimentary rocks. The intrusive nature of the serpentine is shown in the way in which it cuts across the bedding of the older rocks and in the contact metamorphism it produced. In places traces of the structure of the

original eruptive rock can be made out in the serpentine. In Central camp the serpentine is occasionally somewhat fibrous, approaching asbestos. Near the Koomoos-McCarren Creek divide it seems to pass into a soapstone or talc. Often it is altered to a rusty aggregate of dolomite (and perhaps other carbonates) and white quartz veins. It is doubtful if all the serpentine in the district is of one age. Boulders of serpentine are found in the green volcanic conglomerates which would indicate that some of it was older than these pyroclastic rocks. On the other hand, some of it seems to be intrusive in the green porphyrite which is of a little later age than these volcanic conglomerates. The serpentines are found in Smith's, Wellington and Summit camps and the country to the south. They are particularly abundant in Attwood and Central camps.

The older pyroclastic rocks and porphyrites are widespread; in fact they are the commonest rocks in the district.

Porphyrites and volcanic conglomerates.

This series of rocks consists of green tuffs and volcanic conglomerates and breccias, fine ash and mud beds, flows of green porphyrite, and probably some interbedded limestones and argillites. The tuffs, conglomerates and breccias consist of a mixture of pebbles and boulders of porphyrite material with a great many fragments (probably a large proportion) of the rocks through which the volcanics burst. Pebbles and boulders of limestone, argillites, jasper and chert are common. Such of serpentine and old granite and old conglomerates are much rarer. In form the pebbles and boulders are rounded, subangular, angular and of irregular and fantastic outline. Sometimes they are somewhat sorted but often they are tumultuously arranged (agglomeratic). Beds of mud, ash and tuff alternate rapidly with coarse volcanic conglomerates and agglomerates. Sometimes the matrix seems to be formed of porphyrite injected between the boulders. Limestone, now crystalline, seems occasionally to have been interbanded with them. It is often arenaceous, bands containing rounded sand grains and pebbles alternating with pure limestone. The sand and pebbles are well sorted and these arenaceous bands are sharply defined from the pure limestone. The matrix of these bands is white crystalline limestone. Argillites are also interbanded to a limited extent, although it is not always possible to distinguish the volcanic muds from such sedimentary material.

The porphyrite seems to be a little later than most of the pyroclastic rocks although some of it may be interbanded. Owing to the alteration in these rocks through mountain building processes and contact metamorphism, it is not possible to separate the porphyrites

from the pyroclastic rocks, on the map. The porphyrite is usually too highly altered to make out its original character, but it seems to have been an augite-porphyrite similar to that of the West Kootenay district. In places it is agglomeratic.

Origin of rocks difficult to trace.

The great changes produced by mountain building processes and later igneous intrusions, make it difficult or impossible to discover the history of these rocks. The first part of this period of volcanism seemed to have been one of heavy explosions with periods of sedimentation, and to have been followed by a period of more quiet lava flows. The amount of material extruded must have been very great.

A very striking feature in these rocks is the way in which islands or irregular masses of the older sedimentary rocks appear in them. In part, these are included fragments, in part they may represent infolded masses in truncated anticlines, or inequalities in the surface on which this old volcanic series was deposited. Appressed anticlines and faults can be seen in them, but the grand features of their structural relationship are lost through the effects of the later igneous intrusions. Some of the limestone inclusions are to be explained as squeezed intercalated beds. Under pressure, the limestone flows and from a thin bed a line of inclusion-like lenses may be formed. This series of pyroclastic and volcanic rocks seem to have been formed immediately after the sedimentary series, and is therefore probably Palæozoic. In the Palæozoic formations of the Kamloops district, also, green effusive rocks occur.

As already remarked some of the serpentine appears to be of later age than this series.

On the west end of Baker mountain and at the head of Fisherman creek a tough green porphyrite occurs which seems to overlie the sedimentary rocks and old green volcanic and pyroclastic rocks. It looks fresher than the old green porphyrite, and may represent a later eruption. It is an agglomerate in places.

Granodiorite.

At various points throughout the whole district bosses, irregular masses, and dykes of a light gray granitoid rock make their appearance. It is a quartz-bearing biotite-hornblende rock, in places apparently granitic, in others rather dioritic. It is probable that it will prove to be, generally, a granodiorite. It sends out numerous dykes throughout the country, especially in the southern portion of the district. These have usually a porphyritic structure with a microgranitic groundmass. Some are granite porphyries, but a great number are quartz—diorite-porphyrites, as are also some of the smaller

bosses. On McCarren creek, north side, are some basic hornblende gabbro-porphyritic dykes which may belong to the same intrusion. In places these shade off into pure hornblende rocks.

Mechanism of its intrusion.

This granodiorite is evidently intrusive, cutting all the rocks above mentioned. The mechanism of its intrusion is extremely interesting, for it unquestionably forced its way up through the overlying rocks by digesting them and rifting off fragments. This is proved by its contacts, both along the sides and roofs of the masses. These are, except in the case of the dykes, rarely sharply defined, but are irregular and suture-like. The intrusive holds inclusions of the surrounding rocks, and the surrounding rocks are often filled with granite material. The composition of the intrusion seems to be affected by the digested material of the rock into which it has forced itself. It is also shown by the way in which the granodiorite is exposed in small, more or less circular but irregularly bounded masses, in different parts of the district, such as in Wellington camp and on Hardy mountain. In many cases no definite boundary can be assigned to the granitic mass. From the way in which the rock makes its appearance in all parts of the district, it is evident that the whole of it, at no great depth, is underlain by this rock. This rock has some strong resemblance to the Nelson granite of the Kootenay district, both in composition and in its relationship to the surrounding rocks. The Nelson granite, which has been carefully studied, is a sort of granite representative of the Monzonite group of rocks, intermediate between the alkali and the lime-soda series of rocks, and about on the boundary line between granite and diorite. Its composition is as follows :—

Nelson granite.

SiO_2	66·46	TiO_2	0·27	Al_2O_3	15·34	Fe_2O_3	1·68
FeO	1·83	CaO	3·43	MgO	1·11	Na_2O	4·86
K_2O	4·58	H_2O	0·29	P_2O_5	0·08.—Total 99·93		

—*Analysis by Dr. F. Dittrich, Heidelberg.*

The Boundary Creek rock will be found on analysis to contain a greater percentage of alkaline earths, but this may be due to the material it has acquired from the rocks into which it has been intruded, and may represent only a local peculiarity. As the Nelson granite occurs to the north and east of this district and probably also to the west, the Boundary creek rock in all probability belongs to the same great intrusion. If so, its age will be about Jurassic. This agrees with its stratigraphical position in this district.

Tertiary rocks.

The remaining rocks of the district are of Tertiary age, with the possible exception of a few dykes whose age is uncertain. These rocks,

which occur in great abundance in the district, are for the most part of igneous origin. They prove that this part of the country, as well as other portions of southern British Columbia, where they also occur, was the scene of tremendous volcanic activity during Tertiary times, comparable in magnitude with that of Idaho, Washington, Oregon, etc.

Stratified rocks.

The oldest Tertiary rock is a coarse conglomerate which occurs on Baker and Thimble mountains. It is a coarse conglomerate containing boulders of all the older rocks of the district with some of volcanic origin. It resembles the basal conglomerate underlying the volcanic rocks of the West Kootenay district* and may perhaps correspond to the Coldwater group of Oligocene age of the Kamloops district. It is probably of fresh water origin, and may represent an old river bed. Overlying this conglomerate, but in many places resting directly on the older rocks, is a white gritty tuff, consisting largely of fragments of quartz and feldspar, with a little calcareous and ash matrix. This rock is locally known as 'sandstone,' and also as 'porphyry.' It is much more widespread than the conglomerate. In Copper camp, near Ingram creek, some sandstones and shales occur holding fossil plants

Lignite coal.

altered to lignite. In Copper camp these are scattered through the rock, but on Ingram mountain a bed several feet thick of lignite occurs. Here some sheets of lava are interbedded with the sandstone, but generally the lavas are younger and overlie the pyroclastic or sedimentary rocks, where these occur, or rest directly as a capping on the pre-Tertiary rocks of the district.

Lavas.

The volcanic flows are present in great thickness. In composition they vary from a dark heavy olivine-bearing basalt to light coloured andesites, dacites, trachytes and possibly rhyolites.

The earlier eruptions were evidently from local vents and explosive in their nature, as shown by the beds of tuffs and their irregular distribution, and the occurrence of volcanic plugs at Phœnix, near Summit City and on Thimble mountain. These are, however, not the earliest vents as they pierce the gray tuffs and the lower volcanic sheets.

The later volcanic flows, from their wide distribution and absence of tuffs, have probably come from fissure eruptions.

The basic lavas are often amygdaloidal or scoriaceous. The vesicles are often filled with chert, agate or zeolites.

*Summary Report for 1900, pp. 67, 70, 74.

The basalts are often coated with a green material which prospectors have mistaken for copper carbonate. It appears to be largely manganese, copper being entirely absent.

These volcanic rocks are similar to those described in the West Kootenay district* and in the Kamloops district.† Dr. Dawson subdivided the Kamloops volcanics into a lower and upper group, both of Miocene age. This subdivision cannot be made in the Boundary Creek district, nor was it feasible in the Shuswap district.

Capping dissected by streams.

These rocks which once formed a continuous capping over the whole of the district, except perhaps the highest peaks, have been dissected by the streams and now occur for the most part as isolated outliers on the tops and sides of ridges. This is their mode of occurrence at the northern and eastern parts of the sheet. They form an almost continuous capping among the range west of Boundary creek to the International boundary line, though cut through by Wallace creek, partly cut away by Copper creek, and in some places by the Kettle river.

Some of the little remnants of these volcanic rocks are too small to map.

Their occurrences in Copper Creek valley, in Jolly Jack creek valley and Kettle river valley, far below exposures of older rocks, prove that these were valleys in early Tertiary times.

Movements after extrusion.

The attitude of these rocks, however, prove that mountain-building forces were at work after their extrusion. In places the tilting of the beds might be explained by deposition or solidification on an inclined surface, in others as near as Eholt on the Columbia and Western railway, where they form a syncline trough, it might be explained by the intrusion of the alkali-syenite rocks described below. But on Copper creek where the volcanics and underlying sandstones are tilted sixty degrees or more to the east, neither of these explanations will apply. So that it is certain that considerable movements of the earth's crust occurred here in Middle Miocene times, if not later. The ore-bodies, which as will be shown later, were formed about the same time, would be subjected to the same movements.

Besides the volcanic plugs, such as those at Phœnix (which cut the tuffs and lower volcanic sheets, and whose material is identical with that of some of the basic flows) bosses, dykes, intrusive sheets and possibly surface flows of alkali-syenite material occur, which are newer than at least the lower members of the Tertiary volcanic group.

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*Summary Report, 1900. †Annual Report, G. S. C., 1894, Part B.

Alkali syenites and alkali syenite porphyrics.

Where occurring in a boss or large dyke the rock is medium to coarse grained, pink to grayish, consisting largely of feldspar of somewhat glassy habit, some biotite and a little diopside and hornblende, with accessory apatite, magnetite and titanite. A little nephaline and sodalite also occur in it. The feldspars are microperthite and albite, with perhaps anorthoclase. They are sometimes idiomorphic with a tendency to arrange themselves in parallel alignment or radially around a bisilcate. The bisilicates form but a small percentage of the rock, and of these biotite is the most important. The hornblende is a bluish green variety with high extinction and strong dispersion. In te powdered rock a blue mineral with the characters of riebeckite was detected, so that this hornblende is probably an accessory mineral.

This rock is an alkali syenite, probably of the Pulaskite type. In the smaller dykes it has the structure of a porphyry and is therefore in such cases, an alkali syenite porphyry. The groundmass is often very finely granular and the phenocrysts are rosette-like aggregates of feldspar crystals with an occasional one of biotite.

There are also dark lamprophyric dykes and light bostonite-like dykes which are probably connected with this rock.

Analysis of pulaskite.

This alkali syenite or pulaskite is the same rock as the Rossland syenite that is widespread over the western part of the West Kootenay district.* An analysis of the latter gave the following results:—

SiO_2	62·59
TiO_2	0·54
Al_2O_3	17·23
Fe_2O_3	1·51
FeO	2·02
MnO	Trace
MgO	1·30
CaO	1·99
K_2O	6·74
Na_2O	5·50
P_2O_5	0·11
H_2O direct	0·30
CO_2	Trace
Cl	Trace
SO_3	Trace
	99·83

Analysis by Dr. F. Dittrich, Heidelberg.

* Summary reports, 1898-1900.

This analysis agrees closely with those of previously described pulaskites.

Alkali syenite

The alkali syenite bosses and dykes are particularly numerous in the northern half of the Boundary Creek district. North of the sheet is a large area of it. They are newer than and intrusive into all the rocks of the district with the possible exception of the latest volcanics. The most common mode of occurrence in the map-sheet is as porphyry dykes or intrusive sheets, but some horizontal sheets exposed on the surface may have been surface flows, and some of the lavas seem to have about the same composition. From their relationship to the volcanic rocks it is probable that the latter are alkaline in composition and that the alkali syenites plug the vents through which the later flows reached the surface.

Besides the rocks above described some dark basic dykes occur which seem to be connected with the volcanics.

Distribution of rocks.

The distribution of the various rocks will be shown on the map and need not be described here.

The commonest strike for the sedimentary rocks as well as for the various dykes is about N. and S., but many exceptions occur, as is natural in an eruptive area.

The Ore Deposits.

The ore bodies may be divided into three groups. (1) The large low grade copper-bearing deposits, (2) Oxydized copper veins, (3) Gold-bearing and silver-bearing veins.

Low Grade Copper-bearing Deposits.

According to the form of the deposit this group might be subdivided into—

Low grade ores.

(*a*). Huge bodies, of as yet unknown form, and dimensions, as the Mother Lode, Knobhill-Ironsides. In the Mother Lode the ore, as tested, outcrops for 2,000 feet. The average width is about 140 feet, (though the walls are not natural but rather commercial) and the ore is continuous to the bottom workings, at present 500 feet below the highest point of the vein. The Knobhill-Ironsides lead, extends practically throughout the length of both claims (3,000 feet) and probably into the Gray Eagle. The ore has been proved 800 feet below the highest point of the vein. The west or foot-wall is definitely known

but the hanging wall or what may correspond to it has not yet been reached. One stope is 21 sets wide and 100 sets long (7 feet centres), which will furnish some idea of the size of the ore-body.

(*b*). Bodies of more or less lenticular form, generally occurring in groups or as ore chutes, in vein-like bodies as in the Brooklyn and Stemwinder, and B.C. mines.

(*c*). Smaller veins.

Ore-forming minerals.

According to the chief economic minerals in them, these deposits may be subdivided into a pyritic type, in which pyrrhotite, chalcopyrite with some pyrite are the chief economic minerals; and a magnetitic type in which magnetite, chalcopyrite with some pyrite and specular iron are the chief minerals. Excepting that the pyrrhotite of the one is represented by magnetite in the other, these two types appear to be identical. Both the magnetite and the pyrrhotite replace the constituents of the country rock in the same way, both seem to have been formed, on the whole, a little prior to the other vein minerals, holding them in little veins or as points scattered through, yet sometimes interbanded with them. They are both accompanied by the same accessory and gangue minerals and the country rocks show the same alterations in both cases. Rarely do both the pyrrhotite and magnetite occur in the same deposit. In the Old Ironsides and Mother Lode pyrrhotite is, however, present, and in one or two small veins, as on the O. P. and Wolverine claims, both are found. The B.C., Maple Leaf, Winnipeg, Lake and Morrison, may be mentioned as representatives of the pyritic type, while the Knobhill-Ironsides, Mother Lode, Sunset, Brooklyn, Snowshoe, Oro Denoro, Emma and R. Bell belong to the magnetitic type.

It might be remarked that this pyritic type has not yet been found in such large masses as the other, but that the magnetitic type is common in all forms.

Besides the metallic minerals already mentioned, marcasite is occasionally present and, rarely, arsenopyrite, galena, zinc blende and molybdenite, but these are in all cases subordinate in quantity. Tetrahedrite has been found in the City of Paris, and bismuthenite occurs in a specimen obtained at the Bluebell.

Metasomatic replacement.

The ore, for the most part, has replaced the country rock (metasomatic replacement). On the outskirts of an ore body this substitution can often be seen in all stages of development, the individual constituents of the country rock being one by one replaced. The mineralizers

must of course have followed fractures in the rock, or the line of contact between two rocks when more than one rock is present, and these have also been filled with ore, but the main development of ore has been in the rock itself. Sometimes a fracture-plane, sometimes an impervious rock such as a dyke of diorite-porphyrite or a contact of compact crystalline limestone will form a containing wall to the deposit, but very often there is nothing resembling walls, the ore being irregular in form and gradually shading off into country rock. From the nature of the bodies, altered country rock will form the gangue-stone. In the alteration of the rock, garnets, epidote, amphibole, tremolite, vesuvianite, may be produced and the rock may in addition be silicified and calcified. The calcite occurs well crystallized, in large masses, in little seams or disseminated through the ore and rock. It is seldom found in those parts of a deposit in which magnetite is heavily concentrated. Quartz is often abundant, occurring in the same way as the calcite. Silicification of the country rock to a cherty or quartz-like (jasperoid) mass is a frequent though not invariable phenomenon in the neighbourhood of a deposit. Garnets, epidote and amphibole are very abundant in and near the deposits. They occur both well crystallized and massive, often interbanded with the ores and forming a large percentage of the material mined.

Paragenesis.

All the minerals in the deposits appear to have been formed almost contemporaneously. They are often banded. Where there is a slight difference observable, the minerals like garnet and epidote are often formed first and the magnetite or pyrrhotite before the pyrite and chalcopyrite, but the periods of formation of the different minerals in all cases overlap. The minerals are not evenly distributed, but while sometimes mixed are often bunchy. Magnetite and calcite seem to be inversely proportional—where magnetite is plentiful calcite is sparse, and *vice versa*.

The rocks mineralized.

The ore may occur in any of the rocks except the Tertiary, and even the Tertiary sandstone or tuff, underlying the lavas south of Copper creek, shows some mineralization. The deposits are most numerous, are largest and most valuable in those parts of the district most disturbed by Tertiary volcanism. Limestone in such cases seems favourable for the deposition of ores. In a few instances the ore occurs in the limestone itself, but more frequently it is found in a rock along its contact with limestone. The old porphyrites, or porphyrite-tuffs, breccias or conglomerates (which we will refer to, collectively, as 'greenstone') are the commonest rocks in such cases.

Limestone as country rock.

It is only fair to state that several eminent observers have considered the greenstones to be altered limestone, and have consequently concluded that a characteristic feature of these deposits is their occurrence in limestone. Emmons holds this view, although he recognizes the pyroclastic nature of the Ironsides rock* Since the rocks are usually altered and the minerals produced are those common in metamorphosed limestone, it is natural that without a close study these rocks should be considered altered limestones. That they are not altered limestones but altered volcanic and pyroclastic rocks is established by detailed field study and the examination of thin sections. Moreover, it is found that the limestone becomes white or crystalline, with some silicates developed, but is not, as a rule, subject to the same degree of alteration as the greenstones, and that thin bands and tiny inclusions of it in the greenstones preserve their identity, even when that rock is greatly altered. Hence it is usually an easy matter to establish the boundaries of a limestone mass, and it is found that the limestone masses while very conspicuous and somewhat numerous are, as a rule, of very limited extent.

Limestone contacts favorable.

The contact between limestone and the porphyrites or pyroclastic rocks seems, as observed above, to be a favourite location for the deposition of ores, and in such cases the ore seems to have a distinct preference for the greenstone.

The lack of mineralization in the limestone may be due to the fact that the limestone often flows and forms compact lenticular masses, instead of fracturing under pressure, and thus furnishes no channels for the mineralizing solutions. If attacked and replaced by them it must have been along the contacts and this must have taken place comparatively evenly, leaving a clean-cut unmineralized wall.

In the case of large deposits along such a contact, it may be difficult to prove which rock is replaced. The fact that clean ore lies along unchanged white limestone, the limestone forming a well defined wall, while the ore and gangue minerals wander off and disappear without any line of division in the greenstone, would make it appear that the greenstone was the rock which suffered greatest replacement. But in many cases, as in the Snowshoe and the B. C., the original structure of the porphyrites or pyroclastic rocks can be seen in the ore. But the strongest evidence of the selection by the ore of greenstone rather than limestone along a contact is obtained in small deposits, where the alteration has not obliterated the actual contact. In such

* Genesis of Ore Deposits, 2nd edition, American Institute of Mining Engineers, page 760.

cases it is the greenstone and not the limestone which is most altered and replaced.

The fact that epidote, amphibole and garnets are developed in the ore is no proof of the contrary, for these contact minerals are developed in all the older rocks—granodiorite among the others, and apparently less readily in the limestone than in the other rocks.

Garnetized granodiorite.

On the south side of Pass creek the solid granodiorite is altered in places to solid garnet. The garnets commence to form in the granitic rock from a number of centres, sometimes with a core of granodiorite as a nucleus, and around these centres develop with crystallographic outlines (M.O.M.), generally distinctly zonal. The growth is continued till all the intervening rock between the centres is converted into garnet. That the material for the formation of garnet and epidote was to some extent at least, brought in by mineralizers and did not depend on the country rock is shown by their occurrence in quartz-filled fissure veins in different rock in this district. The Mother Lode which occurs near a limestone contact, may lie wholly within the limestone. The 'gangue' to a considerable extent is a felt-like aggregate of little actinolite fibres, unlike the usual 'gangue' of these deposits. *Emmons decided, after a microscopic examination, that it is altered limestone. Its contact with the white crystalline limestone is fairly sharp and distinct, but this is not the case in other directions. Ore is found in the crystalline limestone without the green alteration products, but it must be admitted that the ore formation was not always later than that of the contact minerals. That the contacts between lime and other rocks should be favourable may have been due in part to the chemical influence of the lime in precipitating the mineral contents of the solutions, but it was also due to the lack of firm cementing between the limestone and the contact rock, which left free channels that the solutions used as highways and bases for their operations. But while such contacts are favourable, mineralization is by no means confined to them. In fact in the largest deposit yet found in the district (Knob hill-Ironsides), with the exception of an insignificant island of it, found on the intermediate level, limestone is conspicuously absent, although it occurs at numerous unmineralized points in the vicinity.

Contacts favour mineralization.

Ore also occurs in the other Pre-Tertiary rocks; the City of Paris is in serpentine, the Winnipeg in granodiorite and serpentine. Large masses of low-grade sulphides occur in the granodiorite between Brown and Pass creeks. In conformity with the principal structural features the ore deposits oftenest lie about N. and S. with an easterly dip.

The ore bodies as contact deposits.

From the foregoing brief description of some of the leading features of these copper deposits it will be seen that they are characterized by irregular and indefinite forms, and by the association of such minerals as garnets, epidote, amphiboles, etc., with sulphides of iron and copper, oxides of iron, with a little molybdenite, arsenopyrite, etc., all of which minerals are primary in the ore. These characters are peculiar to deposits formed by the contact action of eruptive rocks. When an eruptive rock, as a molten mass, forces its way into solid rocks, its effect upon them may be of two kinds. It may cause a re-arrangement of the material of the country rock into characteristic new minerals without altering the chemical nature of the rock. This is largely the effect of heat and therefore is confined to the actual contact between the intrusive and the country rock, being most intense at the contact and gradually fading away from it. A second effect may be to alter the chemical nature of the country rock near and along the contact. This is effected by means of the vapours and liquids the molten rock-magma contains and which are given off when the rock solidifies or reaches the surface. These vapours and liquids are strong mineralizers; they contain chemical reagents derived from the molten rock. This kind of contact action (pneumatolytic) is not as dependent as the former upon the actual contact of the eruptive for its intensity, for the gases and liquids may wander into the country rock along fractures and fissures and do their work there. Consequently, while often found along the actual contact, the 'pneumatolytic contact zone' may be found as islands in the neighbouring country rock. It is to this class of deposits that the low-grade Boundary ores belong.

Somewhat similar deposits, though on a much smaller scale, of magnetite and chalcopyrite occur at * Cherry Bluff, Kamloops lake, near what Dr. Dawson considered a volcanic vent. These have no doubt been formed by volcanic after-actions.

† In the Cristiania district, Norway, magnetite and specular iron, together with the sulphides of copper, zinc, lead, etc., occur within the metamorphosed zone of eruptions, especially of granite, though as far as 2 kilometers from the actual contact. In association with them are contact minerals similar to many in the Boundary district. These deposits are explained by Vogt and others as the result of contact metamorphism and pneumatolytic after-actions.

‡ Lindgrun in a recent paper on the subject of contact deposits gives some United States examples of this same type of deposit.

* Annual Report Geol. Surv. Can., vol. VII. (N.S.), 1894, p. 341B.
† Zeitsch. fur Praclt. Geology, 1894, pp. 177, 464; 1895, p. 154.
‡ Trans. Am. Inst. Min. Engineers, vol. XXXI. and Genesis of Ore Deposits, 2nd edition, p. 716.

If these deposits have been formed by contact action they must be connected genetically with some eruptive rock or rocks. At first sight it appears as if the granodiorite might have been responsible for their formation. It outcrops at a number of points, covers a considerable area near the principal ore bodies, sends numerous dykes through the country, and evidently underlies most of the district at no great depth. If it were responsible for the mineralization, ore should not be found in it except in contraction joints near its contacts. Ore, however, is found in it apparently independent of its contact and contraction joints. Moreover, in the Tertiary conglomerates and tuffs overlying the older formations no fragments of ore could be found, although carefully searched for, but they are themselves mineralized to a slight extent. Hence the granodiorite cannot be responsible for these contact deposits. Relationships between the granodiorite and deposits.

As remarked above, the ore bodies are particularly numerous and large, and have better values around vents, and intrusions of the Tertiary eruptives. The greater number of the smaller bodies are beside and parallel to alkali-syenite porphyry dykes. This is so frequently the case that the relationship can scarcely be accidental. It is true that a large number of these porphyry dykes appear to cut and be nearer than the ore bodies. While this proves that the ores were formed before the close of volcanic activity, it does not prove that they were not formed during the period of Tertiary volcanism. The alkali-syenite magma sent out a number of systems of dykes with a time interval between. On Lower Arrow lake the same magma has given birth to almost a dozen such systems with a sufficient time interval between for the preceding system to cool before the next appeared. Volcanic vents plugged with basic rocks occur between the Knobhill-Ironsides and Stemwinder on the west and the Snowshoe on the east. The hill on which Mineral Monument XVIII. stands, near the Emma, Oro Denoro, and not far from the B.C. mine, is another vent similarly plugged. No vent was discovered near Deadwood, but the volcanic flows cover so much of the country in this neighbourhood that the chance for finding one, if it were there, is slim. The tuffs show that there must have been one not far away, and the rocks in this neighbourhood are profoundly altered. It is perhaps worthy of remark that all the large deposits lie immediately under the capping of volcanic lavas, though in some cases these have been entirely removed by erosion. It is reasonable to suppose, therefore, that these deposits and the Tertiary eruptions are genetically connected, and that, therefore, they are of Tertiary age. Relationship between the Tertiary eruptions and the deposits.

The ore bodies, like the volcanic rocks, show evidences of movement since their formation; numerous slips, some with gouge or secondary Movements subsequent to ore formation.

filling traverse the ore bodies. This broken nature of the ground, coupled with the original irregularity in the form or the ore body, and the severing of the deposits by dykes, makes the exploitation of the smaller deposits sometimes difficult and precarious. The slips so far encountered have not been sufficiently large to have seriously affected the larger deposits. The serpentine is particularly full of slips, some prior but many subsequent to the formation of the ores, which make it probably the least satisfactory country rock in the district.

A striking feature in the deposits is the lack of surface oxydation or alteration. At most, a few feet below the surface of the ground the ore exhibits the same characters as are found in depth. The soil overlaying a deposit is often quite unstained, offering no indication of the underlying ore, and consequently adding to the difficulties of prospecting: sometimes the surface of the ore even retains the glacial polishing.

On the Knobhill the surface of the ore is in places fluted and striated like a mass of Laurentian granite.

Values.

The values in the ores are principally in copper and gold, sometimes with accessory silver. Further study is required to formulate the laws governing the distribution of gold values. Generally magnetite and pyrrhotite when occurring alone are almost barren, yet this is not always the case. In the Knobhill-Ironsides the massive magnetite is said to have a gold value. This is said to be the case on the Seattle claim, but in an assay of this magnetite made for the writer no gold was found, though the accompanying chalcopyrite was auriferous. In the Winnipeg mine pure pyrrhotite carries as high gold values as have been found in the mine, but at other points in the same mine barren pyrrhotite is found. Chalcopyrite occurring in magnetite and pyrrhotite is generally a gold carrier, but the gold value of an ore does not always increase with the copper percentage. Thus in the Mother Lode the best gold values are said to be found where the ore runs about 2 per cent. in copper. In the B. C. mine the gold is said to be confined to the chalcopyrite—pyrite and pyrrhotite being barren. On the other hand, in the Brooklyn, Stemwinder and Rawhide the best gold values are reported from the pyrite and specularite ores. So far as could be superficially observed, the local opinion that the intersection of veins or stringers with the main bodies does not cause an enrichment, seems to be supported by the facts. It may be noted that where dykes cross the ore bodies there appears in some cases to be an enrichment of the ore. Possibly there may prove to be a relationship between the quartz and the richness of the ore. Though segregated in places, the chalcopyrite is on the whole remarkably evenly

distributed through even the immense deposits. In the Knobhill some bodies richer in copper run transversely through the lode. The magnetite is not evenly distributed. In the Knobhill 'Glory-hole,' a band of magnetite 15 feet wide runs parallel to the deposit. In the Ironsides below the Knobhill magnetite is almost wholly absent.

Away from the chief centres of mineralization, while magnetite and pyrite are still found, copper and gold are only sparingly present.

These ores as a rule are of very low grade, lower than was at first hoped. This has been counterbalanced by the size the bodies have shown in development and their remarkable adaptability of the ores to smelting. The magnetite, quartz and calcite are present in the ore in such proportions that, at most, only a little judicious mixing of the ore from different parts of a mine is necessary to produce a self-fluxing product for the smelter. When quartz is a little scarce it can be supplemented by ore from the gold and silver-bearing quartz veins of the district or by silicious ores from Republic camp, across the International Boundary line. Sulphur is so low that no roasting is required. Ten or eleven per cent of coke only is required so that the cost of smelting as well as of mining is exceptionally low.

A member of the Dominion Copper Company kindly granted permission to publish the following figures regarding the contents of the ores of this company, which are more or less representative of the ores of Greenwood camp.

Gross Returns.

SiO_2	39·00 per cent.		
CaO	17 00	"	
FeO	14 00	"	
Cu	1·95	"	=39 lbs. Cu (at 10c. per lb.) $3 90
Au	·119 oz		2 40
Ag	·44 oz		0 22

Net Returns.

Cu	$3 10
Au	2 40
Ag	0 22
	$5 72

Dr. Ledoux, of the firm Ledoux & Co., New York, through whose hands the output of copper from the district has passed, gives the following information concerning the values of Boundary creek ores.*

* Journal of the Canadian Mining Institute, Vol. v, 1902, p. 174.

The ore from the north side of the Phœnix ravine is estimated to run 1·80 per cent. copper, $2.40 gold, 25 cents silver per ton. The workable ores from the south side of the Phœnix ravine contain on an average, copper 1·70 per cent, gold $1.60, silver 33 cents per ton.

The ore from the east side of the volcanic vents (Snowshoe, Gold Drop, &c.) 1·60 per cent copper, $1.50 gold and 30 cents silver per ton. The run of mines in Greenwood camp as shown by smelter returns is probably 1·60 per cent copper, $1.80 gold and 50 cents silver. He estimates that the low grade ores of the whole district will run from 25 to 35 lbs. copper, 25 to 40 cents silver and from $1.50 to $2.50 gold per ton of 2,000 lbs.

(The B. C. mine near Eholt runs a good deal higher in copper.)

Costs.

The cost of mining is estimated to be from $1.60 to $2.10 per ton, the former being the cost more recently. The cost of smelting must be considerably under $2, and the freedom of the ores from arsenic, antimony and bismuth makes it easy to obtain a market for the copper. The total cost of mining and smelting must be under $3.60 per ton. Dr. Ledoux's estimates agree pretty closely with the information which has been given us.

Values as high as $30 per ton are reported on car lots of ore from the Winnipeg mine, and $20 on shipments from the Humming Bird, the B. C. ore also runs high, but such values are exceptional in the sulphide ore-bodies and the deposits are bunchy and small in comparison with the typical deposits of the district.

Method of mining.

The method of mining adopted is a combination of open quarrying, and the pillar and stope system below ground, similar to that followed in the large iron mines. A description of the method, by Mr. Keffer, was published in the Journal of the Canadian Mining Institute*. The ore in the quarry is usually dropped through an uprise from a tunnel on the level of the ore bins where it is loaded into cars, the large blocks of ore being first reduced by 'bull-dozing' with dynamite or being reduced by an immense crusher.

On the Knobhill the quarrying is to be done in benches, the lower bench being on a level with the railway so that cars may be run in and loaded directly. It is proposed to install steam-shovels for handling the ore, to further reduce the cost of mining.

Permanence of its deposits.

An important question in regard to these deposits is their permanence and character in depth. Unfortunately, it is one that cannot be

* Vol. 5, 1902, p. 213.

definitely answered. This kind of contact action extends to great depths, and an ore-body formed by it may have a great vertical dimension but in the majority of cases in other districts the mineralization is bunchy and irregular and not restricted for a great distance to one plane, though it may be continued along a second plane not far from the first. In the Boundary district the problem is further complicated by the intrusive dykes.

In the B. C. mine below the 400 feet level these become so numerous that it is not worth while following the lead farther, as the proportion of waste rock to be handled would be too great.

Extent of ore bodies.

The work on the best developed claims, Mother Lode and Knobhill-Ironsides shows that these deposits have a considerable vertical extension, and nothing is known of their limit in depth, which may possibly be below the lowest limit for profitably mining such ores. If the plug of brown porphyritic rock east of the Knobhill has vertical walls the ore body with its 45° dip will strike it in depth and cut off this part of the lead. This volcanic plug has not, on the surface a northerly extension, so that it is probable good ground will lie between it and the volcanic plug which lies just north-west of Phœnix station.

The smaller deposits are generally bunchy though often a number of ore masses lie within a small area.

The character of the ores may be expected to remain unchanged, although possibly sulphur may become a little more prominent. Since these deposits show no surface alterations the values are not likely to lessen while the other conditions remain unchanged.

If, as there is good reason for believing, these deposits are of approximately the same age as the Tertiary eruptives, then it is almost the original surfaces of deposits that are at present exposed and being worked, for as they are immediately under the volcanic rocks, very little of the deposits can as yet have been eroded. It will be interesting to see, if with depth, they do not contract, with perhaps a concentration of values.

Description of the Mines.

Knobhill Ironsides mine.

It is impossible within the limits of the present report to give a detailed description of each mine. That will be done in the final report, but a few notes on some of the principal mines will be given here to add definiteness to the above general description of the low grade copper ores of the district.

Greenwood or Phœnix Camp.

Knobhill-Ironsides Mines.—The Granby Consolidated Mining, Smelting and Power Co., Ltd., own and operate these mines. The following claims owned by the company lie in and south of the Phœnix ravine: Phœnix, Fourth of July, Old Ironsides, Knobhill, Victoria Ætna, Gray Eagle, Banner, Tip Top and Triangle Fraction.

The ore deposit as developed lies about magnetic N. and S. running through the Old Ironsides, Knobhill and into the Gray Eagle. Its dip is 45° thus carrying it under the Victoria and Ætna claims.

Nature of country rock.

The country rock is principally the old green volcanic breccia with bands of tuffs and ash, locally known as diorite. The fragments are of chert, argillite, porphyrite and limestone with a few of granite. A little limestone is encountered at the north end of the intermediate level of the Old Ironsides. A dyke of the gray granitic diorite-porphyrite may form part of the 'gangue,' but it is too much altered to be identified with certainty. But it is found on the north side of the ravine and the structure of some of the altered rock, forming the gangue, resembles that of the diorite-porphyrite. On the Knobhill spur, a little east of the ore bins, and forming the foundation of the new compressor plant, is a white granular, even-grained Tertiary tuff, consisting largely of quartz and feldspar fragments of uniform size. It is locally known as 'porphyry.' It occurs interbanded with beautifully laminated cherty ash beds. This rock extends south-westward up the hill to the Gray Eagle, but is pierced by a somewhat circular plug of brown porphyritic rock which might be called basalt. The white tuff at the contact has been melted to a glass for a fraction of an inch, and the rock of the plug has a less highly crystalline selvage which resembles the reddish alkali porphyries. This is no doubt the filling of a local volcanic vent. On the higher ground to the east, dark grayish or purplish andesitic lavas form a capping over the tuff and Pre-Tertiary rocks. These lavas extend across the railway at the station, but are there pierced by a second volcanic vent plugged with a rock similar to the first. Grayish, reddish and pinkish alkali syenite porphyry dykes are common in the neighbourhood, but the only dyke seen in contact with the ore was at the north end of the lead. The western limit of the ore body is well defined but the eastern has not yet been determined, nor has its extension in other directions been definitely established although the development work done on the property no doubt exceeds three miles. (On March 21, 1902, it was calculated to be 14,771 lineal feet.) The material mined consists of magnetite, chalcopyrite, pyrite, specularite, pyrrhotite, calcite, quartz, garnets, epi-

dote and hornblende together with less highly altered country rock. In the Knobhill quarry or 'Glory hole' magnetite is concentrated in a band at least 15 feet wide, through which the copper and iron pyrites are scattered. The band runs parallel to the lead. On the Ironsides the ore is mixed with a great deal of calcite, and magnetite fails. It seems as if the calcite and magnetite alternate with each other in these ores.

The ores from the different parts of the mines are sorted into three bins as :—I. Ordinary ore-rock—garnet, calcite, hornblende, magnetite, copper and iron pyrites. II. Calcareous ore—rich in calcite and poor in magnetite. III. Ferruginous ore, rich in magnetite. No. III. comes largely from the Knobuill and II from the Ironsides.

East toward the Victoria shaft, where the ground was being stripped by ploughs, scrapers and aerial carriers, the ore uncovered contained a good deal of quartz. At one place the silicious band was separated from the ordinary ore by what appears to be a slip. The equipment and method of mining are described in the report of the Minister of Mines for British Columbia, 1901.* A 60-drill compressor, and two 700 h. p. electric motors are being added to the plant. The output from the big quarries and immense stopes is limited only by the smelter's capacity.

Brooklyn-Stemwinder mines.

Brooklyn–Stemwinder Mines.—These properties, lying on the north side of the Phœnix ravine, belong to the Dominion Copper Company. They have had a considerable amount of work done on them, but have been closed down the past year. The country rock is the old green pyroclastic, containing a great many fragments of limestone, with some of quartz, porphyrite and ash material interbanded with limestone.

A dyke of diorite-porphyrite occurs to the west, and many pink alkali porphyry dykes occur in and near the ore bodies. The ore is altered rock containing chalcopyrite, pyrite and specularite. In the Brooklyn, the ore body, which is about 25 feet wide, occurs along, but not in the limestone, which seems to form a containing wall for the ore. This is the statement of the late manager and it agrees with what we saw in the field and in microscopic slides. In the Stemwinder, three courses of ore are supposed to occur. While development work has revealed large bodies of ore, apparently not enough has been blocked out to warrant the erection of a smelter, and the tariff for custom smelting is a great tax on those low grade ores.

* For particulars as to development and equipment of the mines consult the Reports of the Minister of Mines for B. C.

Snowshoe mine.

Snowshoe.—Owned and operated by the Snowshoe Gold and Copper Mines, Ltd.

The conditions here are somewhat similar to those obtaining at the Knobhill-Ironsides, except that the ore-body as explored is smaller though still of immense size. The country rock is the old green volcanic conglomerate or tuff, whose character is distinctly recognizable where not too much altered by mineralization. A lens of gravel-holding crystalline limestone occurs along the west side of the ore-body. A little above it on the Gold Drop, the capping of lavas mentioned above in describing the Knobhill, is exposed. Some dykes of porphyry and dark lamporphyres cut the older rocks. Although 7,000 feet of development work has been done, besides a good deal of diamond drilling, more will be necessary before very definite statements can be made regarding the form of the deposit or deposits. The contour of the surface of the claim seems to conform roughly to that of the deposit, but the latter is more undulating. The ore along its western boundary is dipping eastward, and on its southern boundary it is pitching northward. At its north end at the old shaft the dip is southerly, so that it would appear to form a rude basin. There appears to be a second parallel ore-body. The determination of the form and limits of ore is complicated by the numerous slips, some with much gouge showing that there has been a good deal of movement since ore deposition. Some of these appear to have brought unmineralized rock against ore. The mineralization itself is not regular, horses of rock appearing in the ore. The ore consists of chalcopyrite, magnetite, specular hematite, pyrite, quartz and calcite with some epidote, garnet and serpentinous material. The minerals of the ore are not evenly distributed. Magnetite often occurs in bunches, some parts of the ore are highly silicious and others very calcareous. At the outskirts of the ore-body, as at the south end, stringers of calcite with bunches of ore, sometimes solid chalcopyrite, follow fissures in the rock. The values occur principally in the chalcopyrite; magnetite bears a little gold and silver, while the hematite and pyrite are almost barren. No pyrrhotite or arsenopyrite has been found.

The method of mining is the same as that adopted in the other large properties. The high pressure half, of a 30-drill compressor is being installed to supplement the 5 and 7 drill compressors already in use. Two 80 horse power boilers are being put in, in addition to the 70 horse power boiler already at the mine.

Deadwood Camp.

Mother Lode mine.

Mother Lode Mine.—Owned by the British Columbia Copper Co., Ltd. The group of claims include the Mother Lode, Primrose, Off-

spring, Tenbrock, Don Julis and Sunflower. Mining has been confined to the Mother Lode, but it ranks next the Knobhill-Ironsides as the largest and best developed property in the district. In many respects the deposit resembles the other large ore bodies but it has several features of its own. As in the majority of cases its strike is nearly north or south (a little east of north), and its dip is eastward 55° to 70°. It outcrops at intervals for about 2,000 feet, but is only developed north of the shaft, located about the centre of the deposit. Where explored, its width averages perhaps 140 feet, but its boundaries are somewhat indefinite. The ore is continuous to the 300 feet level, the deepest workings, which are some 500 feet below the highest outcrop of the deposit. More than one ore shoot occurs. On the 300 feet level two are well defined. The minerals occurring in the ore are magnetite, chalcopyrite, pyrite, with a very little zincblende, galena, pyrrhotite and an occasional trace of arsenopyrite, calcite, actinolite, garnet, epidote and quartz. (The ore and rocks of the Mother Lode have not yet been studied microscopically and cannot be described definitely). No specular hematite has been found. The ore like that of Phœnix camp is divided into three classes: Special features.

I. Silicious, made up of the various silicates of calcium, magnesium, aluminum and iron with massive and disseminated copper and iron pyrites, and a little zincblende. Nature of ore.

II. Calcareous calcite and quartz with copper and iron pyrites, sometimes massive, sometimes finely disseminated. Near the wall in the 200 feet level, this ore has some argentiferous galena and blende.

III. Ferruginous ore, consisting of fine-grained magnetite with quartz and chalcopyrite.

These three classes of ore often occur separately but are sometimes mixed. A large mass of magnetite occurs at the entrance of the mule tunnel and several bands of it occur in the west side of the deposit, apparently dipping west. The silicious ore often differs from the Phœnix ores in the amount of fibrous actinolite it contains, and the ores as a whole contain more magnetite. They also differ in not carrying hematite.

The three classes of ore are said to have the composition given in the following partial analysis*.

	I. Silicious.	II. Calcareous.	III. Ferruginous.
Silica	44·23	20·10	27·33
Aluuina.....	7·46	1·31	....
Iron oxyde.....	16·83	12·00	51·12
Lime & magnesia..	16·03	34·00	10·26
	84·55	67·41	89·71

*British Columbia Mining Record, May, 1902, p. 173.

The silicious ores carry a little silver as well as gold and copper. The blende and galena are argentiferous. Magnetite and pyrite, as a rule are not auriferous, but in the Keffer stope the magnetite carries gold. The chalcopyrite when present in such quantities that the ore runs 2 per cent copper, seems to be the best gold carrier, but when nearly pure running 30 per cent copper it carries no gold. The ore along the porphyry dyke carries rather better values than elsewhere. The rock on the west of the ore body forming the foot wall, is an apparently very pure white crystalline limestone. It dips south and east, bending round and cutting off the ore at the north. It has been encountered on the 200 feet level but has not yet been found on the 300 feet. The rock on the east is a green fissile epidote-like material that is said to have the same chemical composition as the ore, except that the metallic minerals fail. Across the ravine to the south the rock appears to be argillite. To the north of the lead the rock is greenstone-tuff and conglomerate, and these greenstones appear to surround the mass of limestone which has no great dimensions. All these rocks, especially to the north, are heavily dyked by the pink alkali-syenite porphyries, and on the surrounding heights, and occasionally in little basins on the slopes, the Tertiary lavas are found. A heavy dyke and one or two smaller ones, of alkali porphyry run through the ore body nearly at right angles, lying almost horizontal but with a low dip to the south and west.

The limestone contact is generally somewhat sharply defined, but it shows a little irregular alteration and some of the metallic minerals occur sparingly in the pure crystalline limestone along the contact. The rock to the east is too much altered to be identified with the unaided eye, but it is likely to prove to be altered argillite. It is likely that the western part of the ore is altered limestone, while the eastern may be altered argillite. No limestone is found in the ore body. It may be stated that the lime in the ore always occurs either combined in the silicates or as calcite scattered through the ore like the other constituents. At the north end of the deposit the altered epidote-like rock overlies ore on the surface and has to be stripped off before quarrying can be done. Recent stripping at this north end has revealed a fine body of good grade ore.

On the lowest level the ore body seems to be altering its dip as if to become parallel to the porphyry dyke. But further work is necessary here before the shape of the ore body can be intelligently discussed.

Sunset mine.

Sunset Mine.—The Montreal and Boston Copper Co., Ltd., owns this claim together with the Crown Silver, lying between the Sunset and Mother Lode, the C. O. D. and Florence fraction. A two-compart-

ment shaft has been sunk on the Sunset and one shaft 260 feet deep on the Crown Silver, and considerable work done, especially on the Sunset (in the neighbourhood of 5,000 feet). The ore body above the 100 feet level has been opened up ready for stoping. It has a width of 115 feet and it is estimated there are 250,000 tons of ore ready to be taken out. Only a few special features in connection with this mine will be mentioned.

Foot-wall an altered rock.

On the foot wall the rock is altered to almost pure silica. It appears to have been either the greenstone tuff or argillite. In places it is brecciated; the pebble-like fragments are embedded in serpentinous matrix. Going into the tunnel from the S. E. on the 100-feet level, after a few feet of silicified and slightly pyritized rock, a heavy slip is encountered which runs N. and S., angle about 50° W., and west of this is solid magnetite ore with some pyrite or chalcopyrite scattered through it. Sometimes the ore is banded. A solid band of pyrite at least 4 feet wide occurs separated from the ordinary ore by two feet of crushed country rock.

Gold contents.

The magnetite sometimes occurs in rosette-like aggregates resembling hematite. Quartz occurs as blebs through the ore, calcite is scattered through and occurs as stringers. Actinolite and epidote sometimes occur in the magnetite. The lower levels were not examined as the mine was closed down at time of our visit owing to the strike of coal miners at Fernie. A specimen of marcasite was shown me, said to occur in a vein cut on a drift from the 300 feet level, running towards the Crown Silver. It is said to run $30 a ton in gold. An ore shoot of sulphides several feet wide with good gold values is said to occur on the 200 and 300 feet levels, which will be used to increase the grade of the 'run of mine.' Alkali porphyry dykes are found running through the ore body, but they are usually small and have no apparent effect on the ore. They have a distinct salband, but their walls are sometimes slickensided, showing that the country rock has moved along them since their formation.

Here, as elsewhere, the ore body shows the effects of earth movements since the ore was formed.

Summit Camp.

B. C. mine.

B.C. Mine.—This mine is owned by the B. C. Chartered Company, Ltd., which also owns a number of claims in the vicinity.

This mine possesses peculiarities which deserve noting. The ore body occurs on a contact between white crystalline limestone

and greenstone, too much altered to determine whether porphyritic or pyroclastic. In thin sections the porphyrite structure can be seen, but this might be a fragment, and north along the wagon road to Eholt, a short distance from the mine, the tufaceous character of the rock is distinct. South, in the south-west corner of the basin in which the mine lies, the compact porphyrite occurs. Dykes of diorite porphyrite, somewhat the worse for wear, occur in these rocks, one just west of the dining-hall. The exact form and extent of the limestone mass cannot be made out, partly owing to covering of drift and partly owing to the alteration which it has sometime undergone.

It appears to be a lenticular mass lying north and south in the greenstone, extending from about the railway spur north of the shaft house, to a point on the hill-side, 200 paces south of the south prospect shaft.

Main ore body.

A large mass of limestone occurs on the hill at the head of the basin, and along the ridge between the B. C. and Rathmullen creeks. Toward the north end of this ridge are greenstone tuffs and conglomerates, extending westward across B. C. creek. These are capped by Tertiary lavas and sheets of alkali porphyry and are much cut up by dykes and intrusive sheets of the latter rock. The main ore body of the B. C. is a lenticular mass, lying about north and south, with a slight easterly dip. It is 65 feet wide and about 200 feet long, but contracting along both dimensions as it goes downward. It is very much cut up by intrusive sheets of alkali porphyry which form regular floors in the lode. There are two sets of these sheets, one a coarser grained reddish porphyry with biotite crystals in addition to numerous feldspar crystals, and a later, light pinkish set, with no visible crystals except those of feldspar. Both sets have distinct salbands against the ore, but the ore does not appear to be affected by them, being continuous from one sheet to the next one below and so on down. It has, however, a platey jointing parallel to the sheets, along which the ore falls readily away. This plating may be due to heating by the dykes and subsequent contraction.

Depth of mine.

The ore is mined to 400 feet, below which the sheets become so heavy and numerous that it would not pay to extract the ore. Other ore shoots on the lead are being tested by surface workings. Sufficient ore has already been taken out to have made the mine a success.

Several diamond drill holes have been run from the 400 feet level, one to a depth of 511 feet below. While a considerable amount of ore was gone through, even to the bottom of the hole, a large proportion

of the core was of alkali porphyry. Toward the bottom of the hole a good deal of granodiorite was cut through, as though this rock occurred *en masse* at no great depth below.

Nature of ore.

The ore consists of chalcopyrite, pyrrhotite and a little pyrite, with the following gangue minerals—garnet, quartz, calcite, and magnesium carbonate, epidote, zoitite, actinolite, chlorite, serpentine plagioclase, and probably kaolin.

This gangue is in part at least altered greenstone, as the structure was retained in a microscope slide. As the limestone, though rather sharply defined, shows some alteration and garnetization, it may form part of the gangue. Garnet is probably the most abundant gangue mineral.

A little specular hematite and zincblends occur on the outskirts of this ore body. The walls are merely "commercial walls."

A fault parallel to the ore body runs through porphyry and ore with no great vertical displacement.

About 200 feet south of shaft house an open cut shows a contact of the white crystalline limestone and the altered garnetiferous rock. The division between the two is sharply defined.

The values are considerably above the average for the Boundary district, principally in copper. The average assay for the ore shipments to the end of 1901 is said to be: copper, 5·8 %; silver, 2·45 oz.; gold, ·015 oz. The best values have been obtained when the ore body is constricted.

Other claims.

In addition to the mines described, considerable work has been done on a great number of properties, in some cases with encouraging results. In Deadwood camp might be mentioned—Morrison, Marguerite, Greyhound, Ah There, Buckhorn; in Phoenix camp—Gold Drop, Rawhide, Idaho, War Eagle; in Wellington camp—Golden Eagle, Winnipeg, Athalston; in Summit camp—Emma, Oro Denoro.

Sulphide deposits, sometimes of considerable size, also occur outside the areas described, as between Brown and Pass creeks, also eastward to the North Fork. These have never advanced beyond the prospect stage, either on account of the grade being too low, or where the grade is satisfactory, on account of the ore being bunchy or through lack of capital. It is possible that valuable deposits will yet be opened up in these parts of the district. Southward and eastward from the main

centre of mineralization, these deposits seem to gradually lose their distinctive character and grade into sulphide-bearing quartz veins, often with well crystallized garnets and epidote in the quartz. Most deposits of this class are as yet merely prospects.

Some of the deposits in Central camp may belong here. The City of Paris is the most prominent property in this locality.

City of Paris mine.

The rocks in this camp are black argillites with intercalated lamellæ of quartz, large masses of serpentine intrusive in the argillites, and dykes and bosses of diorite-porphyrite. Cutting these rocks are more recent porphyry and lamprophyric dykes. The rocks are much shattered and altered. The mine is on a steep side-hill. A tunnel about 1,000 feet long has been run in to the lead, from which drifts run N.W. and S.E., along the lead. These are connected with two shafts to the surface. The rock at the entrance of this tunnel and for several hundred feet in, is an altered gray porphyrite rock, probably altered granite-porphyry or diorite-porphyrite. Its general dip and the dip of its joints is about N.E. Joints or slips in it are filled with little stringers of quartz and calcite. Beyond this altered porphyry is serpentine, very much dissected by slips and fractures.

The lead runs about N. 22° W., and varies in width from mere stringers of ore to 15 feet.

Cross cuts.

From the north-west drift along the lead four cross cuts have been run 90 feet. The rock traversed by them is impregnated with and traversed by stringers of quartz and calcite carrying sulphides, which diminish in amount with the distance from the main lead. In one cross cut an ore body was encountered running S.W., or diagonally to the main lead. The ore occurs in chutes. A dark dyke occurs in the mine with ore following it on each side.

The ore on the north-west drift consisted of argentiferous galena, blende, tetrahedrite, chalcopyrite and pyrite, while on the south-east drift the ore is almost massive pyrite and chalcopyrite. The ore from the north end of this mine was sent to the lead smelter at Trail, that from the south to the Granby smelter at Grand Forks.

Values.

The values are said to be unevenly distributed, running in pay streaks. The tetrahedrite gave very high assays. The mine has been idle for the last year and a half, pending, it is said, increased transportation facilities.

II. Oxydized Copper Veins.

Oxydized copper veins.

These are found in Copper camp at the head of Copper creek. They occur in the Pre-Tertiary rocks along the lower border of the Tertiary lavas, which in thick sheets lie as a capping over the older rocks.

King Solomon claim.

A short description of the King Solomon claim will illustrate this type. This deposit is met with at a contact between a dyke of alkali porphyry and crystalline limestone. Wedge-shaped tongues of the porphyry extend from the main dyke into the limestone. Both the limestone and the dyke are much fractured and traversed by little slips. These fractures cut the limestone into small blocks. In the limestone, and to a less extent in the fractures in the porphyry, along the contact, are deposited various oxydation minerals of iron and copper, including native copper. These embrace red massive and earthy hematite and yellow limonite, crystallized and massive malachite and azurite, a black amorphous substance, containing copper oxide (melaconite), lampadite and chalcocite, cuprite, often in transparent crystals, native copper, chrysocolla and probably copper-pitchblende. The edges of the small limestone blocks have often been dissolved and the copper ores then occur as incrustations surrounding a core of lime. The main fissures are filled with the iron and copper minerals, the smaller principally with the copper. In the porphyry it is only the fractures near the contact which contain a thin film of copper ore, the rock itself remaining fresh and unaltered. About 650 feet from the main working on the King Solomon is a small vein. The rock is here not so badly shattered. On the surface, carbonates and other copper minerals with iron oxides are found; a little below the surface the sulphates of these metals occur, and below these unoxydized pyrite and chalcopyrite begin to appear. What can be seen to be taking place here on a small scale is probably what occurred on the King Solomon ledge (proper) on a much larger scale, so that this type of deposit is probably an oxydized and secondary enriched form produced by the action of surface waters of a sulphite deposit, similar to the first type of Boundary deposits. The iron of the sulphides has been removed or redeposited as hematite and limonite; the copper has been more or less concentrated in the form of various oxydized minerals.

Big Copper claim.

The Big Copper claim, a little to the north of the King Solomon, on which some work was done this summer, affords additional information regarding this type of deposit.

An open cut was run in on the lead 88 feet. The course is about 311° at first but bends round to about 264° (astronomically). The dip

is N. at a high angle. The foot wall is crystalline limestone of convex form, which constricts the vein from a width of 20 ft. at the top of the cut to a width of 6 or 7 feet at the floor. The hanging wall contains some garnet and may be altered greenstone tuff, but it is too decomposed for identification. A dyke of porphyry similar to the King Solomon occurs in the hanging wall. The limestone near the vein looks like an agglomerate with a green matrix containing quartz and other material in pebble-like particles. The matrix is mineralized to some extent, but the limestone is not. Until this is studied, it cannot be affirmed that this matrix is not an alteration of limestone along fractures.

The surface of the vein is altered to a red earthy hematite, which paints everything around; below this is chalcocite in masses a foot square; this can be seen giving place to bornite and the latter to chalcopyrite. Specimens can be gathered showing a nucleus of chalcopyrite surrounded by a zone of bornite, and a periphery of chalcocite. A little native copper and cuprite carbonates occur near the surface. Evidently surface waters have leached out copper on the surface of the deposits and this descending on the vein, and coming in contact with the iron-bearing chalcopyrite, the copper they contained has been precipitated or has replaced the iron of the pyrite, thus enriching the ore finally to chalcocite, after the manner already described by Emmons and Weed.*

The best grade ore is found in the vein overlying the limestone. The ore is said to run 15 per cent in copper, and to carry $4 in gold and 9 oz. in silver per ton. The hematite extends up the hill to the base of the lavas. The depth to which the vein is oxydized and the value below this zone can only be determined by additional work on the deposit.

Copper camp zone of oxydation.

That a zone of oxydation and enrichment should be found in the veins of Copper camp and not elsewhere in the district may in part be explained by the local topography, and the broken nature of the country rock, but the chief factor, in all probability, has been the capping of the volcanic rocks which covers the hill-tops all around and extends almost to the King Solomon and other of these deposits, the deposits occurring underneath their lee. In pre-glacial times these rocks are likely to have extended a little farther, in which case they would have protected the deposits from the scouring effects of the ice-sheet. In addition, the contact between the volcanic and older rocks is likely to be a natural waterway.

* Genesis of Ore Deposits, 2nd edition, Am. Inst. Min. Engineers, page 433. Trans. Am. Inst. Min. Engineers, vol. XXX. Bull. Geol. Soc. Am., vol. IX., 1900. page 179–206

The basalts lying above these deposits carefully tested by Mr. Macneil of the School of Mining, Kingston, have been found to contain no trace of copper.

III. Gold and Silver Veins.

These are found on the outskirts, or between the areas in which the large low grade deposits occur. They are found filling fissures and replacing the country rock along fissures. In their relationship to the rocks of the district they are similar to the deposits of the type I. There is nothing to show that they are not of the same (Tertiary) age. The gangue is generally quartz with some calcite, and in one or two veins near Hardy mountain, siderite.

Economic minerals.

The economic minerals are chalcopyrite, pyrite, galena, blende, tetrahedrite; sometimes rich silver minerals as ruby silver, argentite, native silver, with in some cases tellurides and native gold. The veins vary in width from a few inches to several feet. To illustrate this type of deposit three of the best developed veins will be briefly described:—

Jewel Mine.—Situated in Long Lake camp, about eight miles from Greenwood and four miles from Eholt.

Situation of Jewel mine.

The mine is upon a contact between the gray biotite-hornblende granodiorite and a green schist, which, however, is generally dark green in this vein through development of biotite. As it has not been studied microscopically its original nature is still in doubt. The granodiorite is developed extensively to the south and west, the schists extend northward and across Long lake, but are very heavily cut by alkali porphyry dykes, which, on Roderick Dhu mountain, form the principal rocks. Dykes of this porphyry occur in the mine as well as small dark lamprophyric dykes.

The vein runs about N. and S., with a dip of about 45° E. (The Jewel shaft has a dip of 39° 30′ east). For the most part, as at present developed, granodiorite forms the foot wall and schist the hanging, that is, the ore occurs along the contact, but on the south it is in the granite alone, and it is sometimes found in the schist. The granite contact is not altogether regular, as tongues of it run into the schist. The vein varies in width from 2 to 12 feet with an average width of say 4 feet. Horses of country rock occur in it, often filled with ramifying veinlets and blebs of quartz, so that there has been replacement as well as fissure-filling. The vein is considerably cut up by the porphyry and lamprophyric dykes. A large dyke of porphyry which is

Dykes.

exposed on the surface at the engine house, runs E. and W. and dips north at an angle of about 50°. It is also encountered in the 120′ and 230′ levels. It seems to cut the ore. In the south extension of the 230′ level it has a salband against the ore, but the sulphides are in contact with it and some quartz blebs occur in the porphyry. The ore at this point becomes disseminated in numerous stringers through the rock, which is mineralized for a width of 30 feet. There appears to be a heavy fault here, as the ground is much broken up and a tongue of the massive granodiorite is reduced to a gravel-like mass. The long tunnel to the north is in ground full of slips, with stringers and bunches of quartz running in all directions. This is in schist, a little to the east of the granodiorite contact. It may be that the compact granitic rock has had a mechanical effect in concentrating mineralization, whereas the mineralizers were more disseminated through the schist. One dyke 4 feet thick occurs a few feet below the 120′ level, dipping 30° to the west. It throws the ore 8 to 10 feet east—a normal fault. A lamprophyric dyke encountered north of the shaft dips southward. It crosses the 230′ level north of the shaft and the 300′ south of it. It appears to have affected the ore, rolling it back on the 230′ level. There are numerous small lamprophyric dykes, some only an inch or so wide, running continuously from level to level. These dykes cut the ore and are therefore later. The larger ones fault the ore, generally to the east, in normal faults. Faults later than these dykes have also affected the ore body. Some are parallel to the ore and form a secondary wall, with gouge. That these are not original walls is proved by their faulting the later dykes. Unless the faulting has brought up unmineralized country rock, ore may therefore be found outside them.

Such a relationship between ore, dyke, fault and secondary wall can be seen in the stope south of what is known as the 'extension.'

In one instance, along the footwall, the vein has been brecciated by movement, forming a band 8 inches wide of rounded and angular fragments of quartz in a greenish white matrix, separated from the solid ore by gouge. It is altogether probable that there has been considerable replacement as well as fissure filling. The granitic rock, as well as the schist, has little veinlets in it near the ore body. Following the vein northward along the surface a heavy dyke of porphyry, perhaps 300 feet wide, is encountered, which runs E. and W. It appears to fault the vein considerably, as ore is found on the north side 275 feet to the east. On this vein about 1,000 feet from the main shaft, in a direction 10° E. of north, is a second shaft, down 150 feet, known as the Rowe shaft. The shaft is inclined 53° 30′ eastward, and follows

the vein to between the 100 and 150′ level, when a porphyry sheet cuts through. It appears to fault the vein, as on the 150 feet level, a drift a few feet long had to be run east to catch the vein. A quartz vein is found on the Enterprise, Ethopia and other claims to the north, which appears to be the northward extension to the Jewel vein. The ore is quartz, containing galena, pyrite and chalcopyrite. In the upper part of the vein some free gold and rich tellurides are found. The amount of sulphides and the values vary greatly from place to place in the vein, and no rule governing the distribution has as yet been discovered.

Gold contents of ore.

The walls are mineralized for a short distance from the vein, the hanging wall as a rule having better values than the foot, running from $1 to $3 a ton for two feet or so from the vein. The galena carries the best values; pyrite is also rich. Chalcopyrite is likewise valuable, but there is very little of it in the ore. Solid galena is said to have assayed $300 in gold per ton. Solid pyrite assayed $57 in gold. Some silver is also present. The ore as mined is said to run from ten to twelve dollars per ton. If a method of successfully concentrating the ore can be secured the future of the mine should be bright. Some calcite in veinlets occurs in the ore and in fractures in the dykes, so that it is probably of later formation than the vein. A mineral which appears to be sericite is developed in the quartz to a limited extent, and the formation of mica in the schist seems to be the result of the agents of mineralization.

Providence mine.

Providence Mine.—Situated one mile north of the town of Greenwood. Though one of the first claims located, and though 45 tons of ore shipped by pack train in the early days netted a handsome profit, very little work has been done on the property. The reason seems to have been that the vein, after following the shaft for a distance, began to dip away from it at a considerable angle. This discouraged the operators and about the same time quartz veins went more or less out of fashion in the district, the low grade deposits receiving the attention. Recently Mr. Fowler, a prospector, took over the claim, followed the vein where it dipped out of the shaft, and now the prospect gives promise of becoming a profitable little mine. The rock is greenstone or greenstone tuff, along a contact with granodiorite; the vein, however, so far as developed, is in the greenstone. At the entrance to the open-cut the granodiorite is exposed. Next follows a 10′ east and west dyke of porphyry and then the greenstone. The vein seems to bend eastward along the north side of the porphyry dyke. The vein in the open cut strikes 21° (mag.), dipping 60° to the east. At and between the two shafts its course is 40° (mag.) The dip is 60° southeast. About 10′ below the surface in the shaft the vein pinches and

flattens for a short distance, when it pitches down and widens once more. Its width varies from 8 inches to 4 feet, with an average width of rather more than one foot. The vein then is not uniform in direction, dip or width. Some slips occur, faulting the vein a foot or 15 inches eastward.

Description of ore.

There is some replacement of the wall rock, the greenstone being silicified and pyritized, and traversed by tiny veinlets. The ore is white, rather watery quartz, often crystallized or with a tendency to crystallize, containing calcite, galena, zinc blende, pyrite, chalcopyrite, with some tetrahedrite, chalcocite, ruby silver and argentite, native silver and gold. A little sericite seems to be developed in the quartz. The galena occurs in masses an inch or more in diameter, with zinc blende. Tetrahedrite is found through the galena and the quartz. Chalcopyrite occurs in this quartz in particles up to $\frac{1}{2}$ inch in diameter. The chalcocite, the rich silver minerals and the native silver and gold occur generally in films around quartz crystals or in small crevices and cracks through the quartz or in the small masses of gray calcite contained in the quartz. This occurrence of rich minerals in films in secondary cracks in the ore shows that there has been secondary enrichment, and that both silver and gold have been carried in solution and precipitated. This work has probably been done by surface waters. Not enough work has been done to determine the depth to which this enrichment extends.

The galena and tetrahedrite are both very rich in silver and have good gold values.

The 45 tons shipped in the early days to the Tacoma smelter are said to have yielded 200 oz. of silver and $6\frac{3}{4}$ oz. of gold per ton.

Since work has been resumed shipments have been made which have also yielded high returns. A shipment in August ran about $145 per ton.

Not enough work has been done to show the relationship between the vein and the porphyry dyke. As stated above, where exposed the vein bends east along the porphyry. If the porphyry does not cut the vein, the latter is almost certainly of Tertiary age.

No. 7 Mine.—Owned by the No. 7 Mining Co., Ltd., of New York, situated in White's or Central camp.

The vein occurs on a contact between serpentine on the west and black argillites on the east, and on both sides are light and dark porphyritic dykes.

The vein which varies from 18 inches to 7 feet in width, runs N. W. by W. It dips 53° E. to the 60 feet level and then flattens to 45°. On the footwall and forming a wall to the vein are several small black dykes, too decomposed for determination, and these are of great assistance in mining. In the hanging wall is a dyke of gray syenite porphyry. In the prospect tunnel 250 feet east of the shaft house this cuts the vein and faults it with a throw of 5 feet. On the 60 feet level it also cut the ore and a tongue of it divides the vein into two branches. A second dyke of apparently the same rock cuts through it and everything else. The course of this second dyke is S. E ; dip about 50° S. W. A dark micaceous dyke 20 feet wide also cuts the vein. The vein is occasionally found completely in the serpentine. The ore is quartz, carrying galena, a little blende, a little pyrite (possibly marcasite) chalcopyrite and tetrahedrite. The ore is often banded. On the 200 feet level, east drift, the ore has some bands of country rock lying in it, so that replacement has occurred here also. The galena carries silver values and the pyrite gold values. The ore assays from $7 to $60. As shipped it runs probably from $10 to $15.

The mine has been developed to the 300 feet level. In July shipment and work was suspended on account of the difficulty of transportation.

Quartz veins are numerous in the vicinity of Greenwood and between July creek and the North Fork of Kettle river. They occur in all the Pre-Tertiary rocks. With typical fissure veins replacement of the country rock is generally somewhat pronounced. Some of them have been developed with satisfactory results, some are too poor to work, while others seem to have lost values below a shallow zone of secondary enrichment. In general they have not received the attention that might have been expected or that they deserved.

Other materials of economic or possible economic importance in the district.

Platinum—In the report of last year the writer called attention to the possibility of platinum being found in the district and neighbouring parts of British Columbia. The reasons for expecting platinum in this part of British Columbia are :—1. The widespread occurrence of basic eruptive rocks, now mostly altered to serpentine. It is in such rocks that platinum has been most frequently found, and so far as is known, the platinum of placers has been for the most part derived. 2. The similarity in the geological conditions here and in the Similkameen district, where the most productive platinum placers in North America are located. 3. Platinum.

The resemblance between the chalcopyrite-pyrrhotite ores of this part of British Columbia and those of the Sudbury district, where those ores carry sperrylite, the arsenide of platinum. It has recently been reported as occurring in the copper ore of the Rambler mine 60 miles from Laramie, Wyoming. In a *Bulletin on Platinum by J. F. Kemp, just issued, the author gives the results of his investigations on the occurrence of platinum in the Similkameen. He found platinum to occur in quantities varying from traces to nearly 2 oz. per ton in sepentine bands in altered peridotite. It was also detected in dykes of pyroxenite in the peridotite, and probably as a secondary mineral in an altered granite.

During the past summer platinum was found in Burnt Basin, about 15 miles east of the present sheet, in a gold-bearing quartz vein, on the Mother Lode claim belonging to the Contact Consolidated Mines, Ltd. Samples of the ore were sent by the manager, Mr. Henry P. Jackson, of Rossland, to Baker & Co., Newark, N. J., for assays. These yielded results varying from traces to 0·25 oz. per ton. In a sample of Mother Lode ore brought in by the writer and assayed by Mr. Manly Baker, of the School of Mining, Kingston, platinum was obtained but not weighed. In similar samples, Mr. D. Locke of this department obtained results varying from traces to 0.1 oz. per ton. The quartz carries free gold, near the surface at least, and chalcopyrite, pyrite, galena, blende and molybdenite. It occurs in dark schistose rock which is probably altered porphyrite cut by syenite porphyry dykes, and a basic syenitic or gabbroitic rock. Nearby are limestones and gray granite. Veins of galena and blende occur in the limestone in the vicinity.

Tin. Tin.—Is reported to have been found near Long lake, but no information could be obtained regarding the exact locality. It is quite possible that traces may occur in connection with the intrusions of granitic rock in that part of the district. But no alterations of these rocks were observed, such as take place where tin occurs in commercial quantities.

Coal. Coal.—In the clastic and pyroclastic rocks of Tertiary age, underlying the volcanics some small lenses or bands of coal are found. West of Midway, outside the sheet, a bed is of sufficient thickness to have attracted attention, but nothing worthy of note was found in the Tertiary rocks of the Boundary Creek Sheet.

* Bulletin of the U. S. Geol. Survey, No. 193—Geological Relations and distribution of Platinum and associated metals. J. F. Kent.

Petroleum.—Borings for oil are being made on the banks of a pond just west of Observation mountain, near Grand Forks. Since the rocks are all crystalline or igneous, of very complicated structure, the discovery of oil in any quantity would be entirely opposed to all past experience in the occurrence of mineral oil. So far oil has been found to occur where there is organic material present to furnish the hydrocarbons, a porous rock present to retain the oil, and an anticline or some such structural feature which would furnish room in which it might collect. None of these conditions are present in this district. Petroleum.

Clay.—Clay suitable for brick-making occurs in the neighbourhood of Grand Forks, on Eholt creek, Lind creek and elsewhere. Brick clays.

Serpentine.—None of the serpentine seen was sufficiently massive to be useful as an ornamental stone. In White's camp a very pure soapstone occurs which, near transportation and a market would have an economic value. In the same locality some fibrous serpentine occurs (chrysotile asbestos). None of the fibres seen possess the requisite quality for commercial purposes. Serpentine.

Building Stones.—The granodiorite of Greenwood is quarried as a building stone, for which on account of its jointing and quality it is well adapted. Some of the syenite porphyry dykes exposed on the railway cuts would make good building and ornamental stones. The Tertiary tuffs and sandstones where accessable as at Phœnix and near Midway, would also make good building material. Building stones.

Marble.—Some of the crystalline limestones are sufficiently massive and pure to make good ornamental stone, but they are not always accessible. Many are also suitable for burning into lime. Marble.

The occurrence of clay with these limestones would make a cement industry possible if there should ever be an available market. Cement.

Hints to Prospectors.

Since there is a great deal of similarity between the geological conditions in the Boundary district, and those of other parts of Southwestern British Columbia, so far as they are known, it is quite likely that the experience gained in the Boundary Creek district may be applied in the districts west of it. Some of the results of observations in the Boundary district may be summarized as follows :—

Ore may be found in any of the Pre-Tertiary rocks where conditions for mineralization were favourable.

Conditions under which mineralization has taken place.

The chief condition for mineralization appears to be heavy Tertiary volcanism. Ore occurs, (1) near vents through which the volcanic rocks reached the surface: and (2) where the country rock is extensively dyked by the pink or gray alkali-syenite porphyry. Limestone contacts in such areas should be prospected with particular care.

On account of the irregular form which the ore bodies may possess and the complex nature of the rock formations, a careful and detailed study of the surface of the ground in the neighbourhood of the mines would be of great practical assistance in the exploitation of the ore bodies. For the same reason development work must always be kept well ahead of the actual mining. Cross-cutting must frequently be resorted to, to determine the actual limits of the deposits, and to prove the existence or non-existence of parallel ore shoots. The limits of mineralization must be actually proved, and similarly, only that ore can be with certainty reckoned on which has been actually blocked out. In this connection diamond-drilling can be resorted to with advantage.

Magnetic methods of prospecting.

Prospecting by means of magnetic surveys might sometimes be successful, so far as the magnetitic and pyrrhotitic ore-bodies are concerned. Since much of the surface is drift-covered, and the ore-bodies do not as a rule have any oxydizing effect on the soil above, this is often the only way in which any indication of the spot where a test pit should be sunk can be obtained. It might also be applied in searching for ore-bodies in the mines themselves. It has not yet been attempted in this district.

Where the ore occurs at a limestone contact, the limestone wall may often be used for following the ore, it being kept in mind that the ore does not always follow strictly along the contact, and that the limestone may pinch out without causing the ore to likewise disappear. The dykes in some cases may be used in the same way.

The pyrrhotite and magnetite should always be assayed, as barren-looking material may carry good pay values. The minerals in the ore and the conditions where pay values occur should be carefully studied with a view to ascertaining which minerals carry the values, and what were the causes which produced the concentration of values. The porphyry dykes themselves, while not mineralized in the same way as the country rock, may in places prove auriferous. In a specimen from a similar alkali-porphyry dyke, from the Valkyr mountains, east of Lower Arrow lake, examined last winter, free gold as a primary constituent was plainly visible, even with the naked eye.

Since, with the exception of certain deposits in Copper camp, there is no zone of oxydation and secondary enrichment in the large deposits, while the general conditions remain unchanged, no loss of values is to be expected in depth.

Platinum should be tested for in the copper ores and in the quartz ores. Gravels of streams draining areas of serpentine should be panned for platinum. In places the nuggets are sometimes brown or lead-coloured, but become silvery white when treated with nitric acid. The serpentines themselves, especially where containing chromite (a magnetite like mineral), might be assayed for this metal. Platinum.

In the oxydized type of copper deposit a zone of enriched sulphides occurs between the oxydized minerals and the pyrites. Below this zone of enrichment the deposit may or may not have sufficient values to pay for working. Sufficient work has not been done to determine the lower limit of the zone of enrichment.

The quartz veins merit more attention than has been given them.

In prospecting it is to be remembered that float may have been carried a considerable distance, even across valleys, by former glaciers. The general course of the latter was about S. 30° E., but it was influenced by the local topography.

PRODUCTION.

While a little high grade quartz ore was shipped from the district by pack train, ore production may be said to have commenced in 1900, after the completion of the Columbia and Western railway into the district, and of the Granby and Greenwood smelters. Since that time the approximate tonnage shipped and smelted is as follows :—

—	1900*.	1901*.	To Nov. 30, 1902.	Approximate. output for 1902†.
	Tons.	Tons.	Tons.	Tons.
Knobhill-Ironsides	64,531	231,762	280,601	310,601
Mother Lode	5,564	99,548	122,577	137,577
B. C	19,618	47,517	11,627	14,627
Golden Crown	2,241		625	625
City of Paris	2,000			
Winnipeg	1,076	977	785	785
Snowshoe	297	1,731	15,540	20,800
Athelstane	1,200	550		
King Solomon		850		
No. 7		665	532	532
Sunset and Crown Silver		800	6,750	8,010
Jewel	160	325	2,175	2,175
R. Bell		480		
Brooklyn	150			
Ruby		85		
Emma			6,700	7,900
Providence			132	172
Small shipments	1,000	500	158	158
Totals	97,837	386,675	448,602	503,962

* Minister of Mines Report for British Columbia, 1901.
† Engineering and Mining Journal.

The production for 1902 will exceed the total previous yield, in spite of the fact that a shortage in coke, caused by the Fernie strike, necessitated the closing down of the smelters and mines during part of July and August, and that lack of power at the Granby smelter, due to exceptionally low water, has, all fall, prevented the smelter from running full blast. Practically all the ore produced is treated in the smelters of the district. Since the completion of the branch of the Great Northern Railway through Grand Forks to Republic, some Republic ores have also been shipped to the Granby smelter for treatment.

Smelters.

There are three smelters in the district: the Granby at Grand Forks, the B. C. Copper Co.'s at Anaconda (Greenwood), and the Montreal and Boston at Boundary falls. These plants are modern and first-class in every respect. The Granby smelter has a sampler of 2,000 tons per day capacity, four furnaces with a capacity for these ores of 380 tons daily each, a briquetting plant for flue dust and two converters with all the necessary and accessory plant. Electric and hydraulic power operate numerous automatic and labour-saving devices. The matte from the other Boundary smelters and from the Hall Mines smelter at Nelson, is sent here to be converted to blister copper. It is proposed to increase the plant by two more furnaces.

B. C. Copper Co.'s smelter, Greenwood: The plant consists of ore bins, sample mills and two 2,300 ton furnaces, arranged on a gravity system so as to require a minimum of energy and labour. During January, one 300-ton furnace smelted on an average $428\frac{3}{8}$ tons of ore daily, with a record run of 460 tons of ore in 24 hours. From these figures the remarkable adaptability of Boundary Creek ores to smelting is readily perceived as well as the skill with which the smelting operations are conducted.

The Montreal and Boston Copper Co., have taken over the Pyritic smelter at Boundary falls to treat their ores from the Sunset and Crown Silver. This smelter, which was built for pyritic smelting, was never operated as such, and has now been fitted up for ordinary smelting. The plant consists of one large furnace and a sampler. A second furnace is contemplated.

BRIEF HISTORY OF THE DISTRICT.*

The first man in the district was Charles Dietz of the Riverside Hotel, who came in, in 1857; 'Old Jolly Jack' Thornton, who still resides in a cabin on Boundary creek, was the second man. Boundary

* Most of the statements herein made are based on information supplied by John East, one of the early pioneers.

creek was worked for placer gold, in 1862, a small town being located south of the International boundary line. In 1884 the first mineral claims in southern B. C. were staked, the Victoria and Washington, afterwards Old England, located on Rock creek a few miles above Kettle river. The same year two of the pioneer prospectors, John East and W. T. Smith came to the Boundary creek district, and in 1885 they located the first claim in the district, the Rocky Bar, now the Tunnel on Boundary creek near the falls. The same year they also located the Non-such in Smith's camp. First location.

In 1886 the Bruce claim on Ingram Mount was located by East.

In 1887 George and David Leyson and Geo. Y. Bowerman located the Big Copper, as the Blue Bird. They went on through to Trail creek, where they made some locations around what is now Rossland, but they allowed their claims to lapse. The King Solomon was located by Lefabre and Lynch, who threw it up. In 1888 it was acquired by D. C. Corbin. In 1890–91 there were some locations made by James Attwood and John Lemon around the Buckhorn. On May 23, 1901, the Mother Lode was staked by William McCormick and Richard Thompson, and on June 2, John East located the Sunset and Wm. Ingram located the Crown Silver.

The same summer the pioneer prospectors crossed over to what is now Phœnix. Matthew Hotter located and named Knobhill. Attwood located the Brooklyn and Summit camp. Scott McRae, Geo. Taylor, Henry White, Geo. Rumberger and others also made locations, White and Attwood, in particular, locating White and Attwood's camps. The Providence was located in 1891 by Dickman.

In 1892 Howard C. Watters brought in a 2-stamp mill, which was set up at Boundary falls to treat the quartz of Boundary falls and American bay claims. The Providence shipped about 45 tons of ore, which is said to have netted $15,000. The Skylark is said to have shipped $25,000 or $30,000 worth of ore. Interest in the low grade ore bodies in the early days is said to have been awakened by Scott McRae, who made a trial shipment for outside capital, and by E. P. Sudam, who sampled the ores and brought in outside mining men. The town site of Midway, formerly known as Eholts, was acquired by Capt. R. C. Adams and associates of Montreal, in 1893. The site of Greenwood was acquired in 1895 by Robert Wood, who immediately founded the town. Grand Forks was one of the earliest settlements. On the advent of the Columbia and Western railroad most of the camps sprang suddenly into incorporated towns. The chief towns of Stamp mills.

the district are Grand Forks, Eholt, Phœnix, Greenwood, Anaconda and Midway, with small settlements at Deadwood, Boundary falls and Carson.

Present population.

The population of the district is supposed to be in the neighborhood of 10,000. The chief industry on which practically all the others depend is mining. The attendant industries and occupations are fully represented. Lumbering is carried on to some extent and ranching is becoming important. It is found that the lower valleys are admirably adapted for fruit growing, and apples, plums and strawberries of prime quality are now being cultivated. The mining camps and towns afford a good market for all such produce.

Geology of the Western Part of the International Boundary (49th Parallel).

Dr. R. A. Daly.

I left Ottawa on May 27 and joined the Boundary Survey party under Mr. W. F. O'Hara, D.L.S., at Greenwood. Active field work was begun on June 5 and, owing to the unusually favourable weather this season, continued with but few interruptions until the middle of October. My field expenses were, as last year, paid through Mr. King, our Chief Commissioner, by the Department of the Interior, but the wages of my assistant, Mr. F. Nelmes, were this season paid by the Geological Survey Department. The geological work of the summer was divided into two parts corresponding to different sections of the Boundary belt traversed by our party. The following sketch is a brief business report of the work done, embodying a few preliminary and general considerations on the areas covered.

Reconnaissance work.

During a rapid journey from Midway to the Similkameen river Mr. O'Hara collected information additional to that secured last year for the completion of the topographic map of that section. In this way I was enabled to have a preliminary view of its geology; material was gathered which will be of value in a future more detailed geological examination. Three weeks were thus devoted to the reconnaissance of this section of the Boundary country. The belt measures 43 miles in length by from 4 to 5 in breadth; a greater width could not be covered because of the fact that the main camp, to which I was attached, was often compelled to locate on or south of the line, while it seemed best to concentrate attention to the Canadian side so far as my own work was concerned.

Topography west of midway.

The whole belt lies within that division of the Cordilleran Mountain System called by Dawson "The Interior Plateau"; it is situated between the Coast (Cascade) range on the west and the complex, rather indefinitely bounded Gold ranges on the east, and forms that zone of the Rocky mountain region of the least strength of relief. In the 43-mile section examined this season the altitudes of the highest summits rarely exceed 5,000 feet above sea-level. The deepest valleys are those occupied by Osoyoos lake and the Similkameen river at its eastern crossing of the 49th parallel of latitude. The lake is almost exactly 1,000 feet above sea-level, and the river is at approximately the same altitude. The average elevation of the higher ridges and rolling hills of the belt is not far from 4,500 feet above sea-level.

The whole of the topography is the immediate product of long continued denudation which has gone considerably further than in the coast range studied last season. In this central part of the Cordillera the alpine horns, serrate ridges, amphitheatres, etc., are absent and, in their stead, the relief is composed of an irregular assemblage of old mountains, low domes, sugar-loaf forms and ridges of relative tameness in aspect, all rounded into the profiles characteristic of mountains that have long suffered erosion by streams and as long suffered loss during the slow but sure streaming of rock debris down the slopes. These slopes are thus of the type called 'graded,' *i.e.*, they are generally of a degree of steepness whereby the loose material weathered off from the bed-rock can assume the form of long, smooth slopes of waste mantling the hills from top to bottom. Bare rock-surfaces in such topography are much less common than in truly alpine, younger mountains.

Relation of topographic developmens to mining.

An important consequence to both the geologist and the prospector is found in the comparative inaccessibility of the bed-rock, covered as it is by the waste. The study of rock-distribution and structure as well as the discovery and exploitation of mineral deposits are, for this reason, more difficult in such mountains than in those characterized by ungraded, alpine slopes. This general fact must never be forgotten in estimating the economic importance of the Cordilleran zone, now called the 'Interior Plateau.' It is, for example, highly probably that the Similkameen district will repay much initial expense in boring for coal even where the prospector has but few outcrops of the coal or its associated formations to guide him in the development. In other words, the few natural exposures of mineral-bearing strata, veins, etc., in 'graded' mountains are worthy of specially energetic study by miners and government surveyors, more for what they indicate concerning mineral deposits buried under the adjacent 'wash' than for their own particular mineral contents. The economic development of the

'Interior Plateau' must, therefore, be relatively slow and expensive, but, as it becomes settled and intelligent prospecting continues, it may prove to be as rich in mineral resources as any other part of the Cordilleran region.

Evolution of the topography.

From the experience gained on the reconnaissance, rapid as it was, I am forced to consider it as inadvisable to describe the region as part of a 'plateau.' Such a name would imply that the area once formed a portion of a more or less continuous, flat-topped or gently rolling, elevated tract, and that the existing diversity of relief is the effect of erosion acting through a long period of time on that block of high land. Such is the view advanced by Dawson for the 'Interior Plateau.' His evidence for it was derived from the study of the northern part of the same mountain-zone lying on either side of the main line of the Canadian Pacific Railway (of the Kamloops sheet and corresponding report by the late director of this Survey). The preparation of the simple, flattish surface of the 'plateau' in this zone of enormous structural complexity is ascribed by Dawson to the prolonged erosion of the crumpled Palæozoic and Mesozoic strata composing a once lofty range. In this way, provided time enough were allowed, an almost perfect plain of denudation (a peneplain) would be produced. Strong bodily uplift of the denuded area would, then, by the theory, give the elevated 'plateau.' On its surface the streams would be given renewed power to lower their channels, deep and narrow at first, deep and flaring open later on in geological time. To such activity of streams in a second 'cycle' or era of denudation, Dawson attributed the great and small valleys sunk in the 'plateau,' and in accordance with his theory, the second period of erosion was responsible for nearly all the existing diversity of relief in the extensive 'Interior Plateau.'

Along the International boundary, however, the evidence for two such cycles of denudation is but slight. The chief positive criterion for the previous existence of an undissected plateau underlain by truncated strata folded and faulted by mountain-building, is the discovery of remnant areas of that plateau not destroyed by erosion. Such remnants seem to fail entirely between Midway and the nearest outlier of the coast range, the Okanagan mountains. The mountains have not the broad, flat tops expected, but are generally of conical or ridge-shaped form, such as belongs to a range worn down in one cycle of denudation. The accordance in altitude of the summits is far from being perfect, and such accordance as does exist can be explained by other conditions of mountain sculpture. Further study of this topo-

graphy will be facilitated when Mr. O'Hara's final topographic map of the belt is completed.

Glaciation west of Midway.

In the glacial period, the Cordilleran glacier, moving southwardly between the Coast range and the wall of the Gold ranges, completely covered the highest summits in the belt. The result has been to disturb the pre-glacial mantle of rock-waste which lay on the old mountains. The loose rock-material was, however, not carried far, and it is probable that the amount of such material now resident in the belt in the form of boulder-clay, stratified glacial gravels, sands and clays, is at least as great as before the ice moved over the country. The field observations agreed in showing an enfeebled erosive activity of the great glacier in this part of its course. Its terminal moraines are not far to the southward across the Boundary line, and the great abundance of drift and but slightly modified pre-glacial rock-waste indicate that the glacier was depositing its load of débris rather than scouring off the products of weathering from the rock-surfaces whence they were derived. The conditions recall the useful parallel that has been made between glaciers and rivers. At the lower end of each the geological work consists chiefly in deposition, a delta corresponding to terminal and ground moraines. Added to the evidence of slight glacial erosion as indicated by the deposits, is that derived from the fact that well-developed roches moutonnées, striated, grooved and still firm, are notably rare.

The glacial veneer of rock-detritus thus left on even many of the summits as well as in the valley bottoms, often corresponds in depth, continuity, and surface configuration to the pre-glacial veneer of weathering products expected from the secular decomposition of the different formations of the belt. Access to bed-rock and prospecting for mineral deposits are therefore almost as difficult as if the country had never been glaciated. Compensating in some degree for this disadvantage, perhaps more than compensating for it, the veneer of decomposed rock-matter, often affording rich, strong soils, will more and more prove to be a valuable asset to the country, since full varied crops can be grown upon the veneer, not only in the valleys, but often far up towards the summits of the intervening mountains.

Stream-terraces.

As in most glaciated regions, the glacial sands, gravels and till of the valleys have been extensively terraced by the respective streams. Fine examples of such terraces were seen along the west fork of the Kettle river. Both there and elsewhere in the belt, excellent illustration was found of the influence of rock-spurs from the adjacent mountains in preserving the terrace-deposits as they may now be seen.

These spurs have controlled the meandering of the streams in such fashion as to restrict the width of the meander-belt more and more as the streams have cut down their channels. The upper terraces have, for this reason, not been undercut and destroyed in the later swings of the meandering streams. Excellent farmland has been preserved thereby and it forms a considerable part of the economic resources of the region.

Terraced alluvial cones.

An interesting special feature of this channel-sinking is illustrated at many points in the belt, but again best of all in the valley of the Kettle river near Midway. Large, more or less symmetric and regular alluvial cones or steep-slope fans of rock-detritus have been washed out of the terrace-sands from lateral gorges. As the main river to which the drainage of the gorges is tributary, swings to the foot of one of these cones, the cone may be partly cut away and thus truncated, and the 'base level of erosion' of its perennial or wet-weather stream is lowered and the cone cut away by that stream. Dissected cones regularly terraced by the repetition of this process are well displayed along the almost treeless valley-walls of the Kettle and other rivers. Just north of the town of Midway, a young, inner cone has been built up in the deep, flaring notch of a terraced older cone since the time when the Kettle river swung away southward to its present position. The whole complex form shows how sensitive are the degradation and 'aggradation' of alluvial material to changes in the position of the base level of erosion.

Geology west of Midway.

Until the topographic maps of the boundary belt surveyed this season are finished, it is impossible to present a report of enduring value on the distribution and structure of the solid rock formations met with. The reconnaissance of the belt from Midway to the Similkameen river resulted in the recognition of at least five chief divisions of its rocks. Oldest of all is a group of crystalline schists, mica-gneisses, mica schists, granites and granitoid gneisses occurring on the shores of Osoyoos lake. These are of great but unknown age, older than a second division of rocks also enormously plicated, cleaved and broken in the stress of mountain-building. This second group is composed of phyllites, slates, quartzites, chloritic schists and amphibolites with highly altered greenstone and true volcanic bands. Certain lenses of crystalline limestone are also provisionally referred to the same great series. Throughout its extent, but more especially in the phyllitic and slaty members, quartz veins, often of huge size occur, but so far, they have proved to be practically barren of the precious metals. This thick and important series of rocks outcrops at intervals

from the meridian lying about seven miles west of Midway nearly to the Similkameen. No fossils were discoverable.

Unconformably overlying the metamorphic group are outliers of Tertiary sedimentary rocks; light and dark gray sandstones, grits, conglomerates and shales, all greatly disturbed and so much destroyed by erosion as to represent but a small part of the once thick and continuous formation, doubtless at one time covering the entire belt. Leaves and stems of exogenous plants of Tertiary habit were found in the sandstones of a long monoclinal section on the wagon road about four miles west of Midway; and again in the gulches tributary to the Kettle river near the bridge about two miles farther up stream; and finally, from a well-exposed section in the canyon of Rock creek. Partly interbedded with, but for the most part overlying the sandstones and shales, are thick, basaltic and andesitic lava flows, tuffs and agglomerates which have shared the dislocations to which the sediments have been subjected. Numerous dykes and laccolithic masses of varied porphyrites cut both sediments and lavas. The exact age of these rocks cannot be stated until the fossil collections are determined.

Several intrusive stocks, batholiths and many dykes of diorite, gabbro, granite and of an interesting syenite of alkaline character, cut the formations older than the Tertiaries, although, on account of their unsqueezed condition, it is believed that, in general, these eruptives are of later date than the fossiliferous beds and overlying lavas. Rather liberal collections were made from this great array of intrusive and extrusive igneous rocks; the microscopic study of these during the coming winter will form a valuable aid in the next detailed study of the belt.

Minerals.

Excepting the auriferous gravels of Rock creek, which have been worked in a desultory fashion for forty years (now almost entirely by a few resident Chinamen), there is no mineral deposit proved to be of economic importance in the belt. Indications of copper in the form of the common sulphides, occur in narrow quartz veins occupying zones of fracturing in mineralized quartzite on the Kettle valley slopes two miles north-west of Midway, but they do not appear to warrant development. Other narrow quartz veins containing the tellurides of gold and silver (calaverite and hessite) are reported from the diorite found on the northern end of Osoyoos lake, west side. East of that lake, a three-feet vein of pegmatite, bearing cassiterite, has likewise been reported by a prospector as cutting the coarse granite. No opportunity was afforded for visiting these localities during the reconnaissance.

Seams of lignitic coal are embedded in the sandstones and shales of the Rock creek Tertiary, but none of them yet discovered is thick enough on the surface outcroppings to be worth exploitation.

Main division of field-work.

The larger part of the field season, from July 1 to October 15, was devoted to more detailed study of a second belt adjacent to the boundary line. The belt measures 10 miles in width and 51 in length, extending from Cascade City on the Kettle river to a point 5 miles east of the Salmon river and near the watershed between the Columbia and Kootenay rivers. Part of the area is covered by the one-inch-to-one-mile Trail map-sheet, already issued by the Geological Survey. In that section of the belt, attention was chiefly given to the delimitation of the formations found just north of the boundary but not differentiated on the preliminary edition of the Trail sheet, the only edition yet issued. Since the Rossland camp, on account of its importance, needs special investigation at once by a party spending at least two seasons in the camp, little time was this year taken in the field study of the district immediately surrounding the city.

Topography in the Gold Ranges.

The whole 50-mile belt lies in that irregular zone of the Cordilleran mountain system generalized by Dawson under the name of the Gold Ranges. The relief is stronger than in the park-country, in which the party spent the earlier part of the summer. The summits here reach altitudes of over 7,000 feet and overlook the Columbia river at 1,400 feet above sea-level. These mountains, however, rarely assume an alpine form, but usually present the appearance of rounded, forest-covered ridges and domes characteristic of the southern part of the Gold Ranges. The greater abundance of rock-exposures both in the river canyons and on the summits makes geological study less difficult than in the 'Interior Plateau,' but this feature is offset to some extent by the thick forest which impedes the progress of the explorer to a marked degree in all parts of the belt except on the highest summits.

Crystalline rocks.

The terranes encountered are for the most part highly crystalline, partly crystalline schists, partly igneous formations. Until microscopic examination of the collections from the different rock-members is made, no account of essential value can be given of conclusions derived from the field observations made on these rocks. Some idea of the great variety in the igneous formations may be gathered from the fact stated verbally by Mr. Ferrier, formerly official petrographer to the Geological Survey, that, within a radius of only 5 miles from Rossland, 108 rock-types have already been discovered. All of the formations except the later dykes and intrusive stocks have been intensely folded and faulted and subsequently so deeply eroded as to give little immediate evidence as to the geological history of the region.

About one-third of the belt is underlain by metamorphic rocks. At its extreme western end, a small patch of foliated, coarse, biotite gne-

isses, cut by pegmatite veins and by dykes of peridotite, represents an Archæan (?) band entering the belt from beyond Christina lake and the Kettle river. A much more extensive, thoroughly crystalline series of crumpled schistose rocks occupies most of the belt between its eastern limit and the Salmon river. This series includes quartzites, phyllitic, chloritic and sericitic schists, biotite schists, thick pods of crystalline limestone, amphibolites, etc. Much of this series has been referred by the first reconnaissance of the Geological Survey, to the Selkirk series. It seems to be unfossiliferous throughout and offers the characteristic difficulties in unravelling structure and plotting boundaries that every worker finds in the Gold ranges. Lying geographically between the first two series is a third, exposed best in the phyllites, quartzites, slates and marbles of the Pend d'Oreille canyon. Indirect evidence suggests a Carboniferous age for this third group of metamorphic rocks.

Upon these complexly folded schists, the extensive volcanic deposits associated with the ore-deposits of Rossland, were laid down. Basaltic, andesitic and more acid lavas, flows, tuffs and agglomerates, cover at the present time a second third of the belt. Erosion has not only swept away much of the thick volcanic veneer from its basement of crystalline schists, but has brought to light several large stocks of granites and syenites intruded into the volcanics since the latter were erupted, folded and faulted. Abundant but obscure remains of endogenous plants of late Mesozoic or Tertiary habit were found in certain slaty ash-beds occurring at the crossing of Little Sheep creek by the Boundary line. These fossils, when determined, should throw light on the age of the older volcanics of the Rossland series. Fossils.

Still younger than the plant-bearing beds and the overlying volcanics, is a fifth series unconformably related to them. It is not important either economically or with respect to the area covered, but has interest on account of the light it throws on the geological history of the region. It consists of various patches of, probably contemporaneous, unfossiliferous sediments lying on the older agglomerates and on the phyllitic (Carboniferous?) formation. The rocks composing these patches are coarse conglomerates and sandstones, sometimes accompanied with tuffs and lava flows of basic composition. The patches are believed to be of Tertiary age, remnants of what is, for the most part, regarded as an irregular, necessarily more or less interrupted, group of river-gravels strongly cemented since being deposited. Rocks probably of Tertiary age.

Numberless dykes belonging to several different epochs of intrusion, cut these five formations and the stocks and batholithic masses which,

for convenience in a preliminary statement of the work done last season, have been roughly and with extreme brevity, here distinguished.

The mechanism of igneous intrusion.

Among the more pressing problems belonging to the general geology of the belt is that one referring to the method or methods according to which the intrusion of the granites and syenites of the great intrusive bodies took place. It became clear to me from a study of the facts observed in the field, that none of the existing theories of intrusion adequately explains the conditions characterisitic of these stocks and batholithic bodies. The origin of the subterranean chambers once occupied by those bodies, and the process by which the invaded formations were so far displaced by the irruptives, form different phases of the same problem; their discussion has to do also with the origin of the abundant igneous rocks of the belt. It has been considered advisable to present in a generalized form, the hypothesis derived from the field-studies of the past two seasons in the Boundary as well as from earlier investigations of eruptive areas, rather than to note specially in this report the concrete phenomena observed during the season just closed. (The statement of the hypothesis will be given in two papers appearing in the American Journal of Science.)

Glaciation.

The glaciation of the belt led to more severe erosion and more complete removal of rock-débris than in the region west of Midway. The drift is consequently less abundant and the rock-exposures more numerous. The upper limit of glaciation was definitely fixed on Record Mountain ridge west of Rossland and elsewhere in the belt, as very close to 6,400 feet above the sea. The south-flowing Cordilleran glacier was, at its maximum, 5,000 feet thick over the axis of the Columbia River valley. Many horns and ridges at that time, projected above the ice as 'nunataks.' Above the 6,400-feet contour, the summits are covered with felsenmeers or mantles of often deeply decayed angular rock-fragments slowly streaming down the slopes. The relatively few ledges there exposed are ragged, greatly weathered and, like the felsenmeers, bear no drift. The contrast with the glaciated slopes below is always sharp and striking.

Mineral deposits.

Since the main purpose of the survey along the Boundary is that special one of developing as far as practicable a detailed structural section across the whole Cordillera, not much time could be devoted to the different, though connected, problems of the mining geology of the belt. Many claims and a few working mines were, however, visited, and data collected which will be used in the preparation of the final report on the Boundary. Of particular interest was an extensive deposit of hematite, largely limonitized, occurring in the marbles on

the north side of Boundary creek about one-half mile up stream from its confluence with the Pend D'Oreille. The ore-body has been traced on the outcrop for a distance of a mile and a half. It is of variable thickness, but the degree of the variation could not be fully determined because of the lack of time and of natural exposures at many points desired. A tunnel has been driven forty feet into the solid ore where it crosses Boundary creek but much development work will be necessary beneath the deep wash before an accurate account of the prospect can be given. A few grains of pyrite were seen in ore-fragments taken from the dump at the tunnel ; failing the required assays as yet, it is impossible to be certain how far the ore is injured by the sulphide. Partial assays reported by Mr. Feeny, one of the co-owners of the property, showed 59 to 61 per cent of iron in the ore, which is thus of high grade quality. The apparent strength of the ore-body, the proximity of abundant flux material, of wood for charcoal furnaces, and the easy access to the property from the Nelson and Fort Shepard Railway, render the deposit worthy of special attention. It is highly probable that other similar deposits will be found on further prospecting in the vicinity. Marbles of economic value may also be expected to occur as phases of the thick masses of crystalline limestone lying between the Pend D'Oreille river and the Salmon river.

The general rock-types and structures characteristic of the Rossland camp are known to be represented in other parts of the igneous formations to which they belong, and smaller ore-bodies similar to those at the camp have been discovered at points distant from the city. It is therefore possible that other copper-gold ore bodies of importance comparable to that held by the deposits of the famous camp will be found elsewhere in the volcanic series. Quite different, low grade gold, silver, and copper deposits in quartz-veins have been staked out in the schistose formations lying east of the Salmon river. So far, the tonnage of ore-bearing quartz exposed at any one of these claims is so small as to forbid active development. Many quartz-veins in the schists and quartzites forming the rough sierra between the Salmon and the Kootenay, run from 25 to 150 feet in width. Thorough prospecting among these, checked by numerous assays, may yet reveal precious metal deposits of great value, though they must be expected to show only low-grade ore. The most favourable outlook will be for free-milling gold-quartz.

Auriferous gravels.

The auriferous gravels in the abandoned former channel of the Pend D'Oreille river were among the first deposits to draw the attention of the mining world to the province of British Columbia. The gravels at Boundary Town seem now to be practically worked out and no min-

ing has gone on for many years at this camp. Placering and 'sniping' on a small scale are carried on by the few ranchers occupying the Pend D'Oreille valley. More extensive hydraulic works were in process of construction this summer at the mouth of Fifteen Mile creek, and are intended to handle the terrace-gravels largely derived from the bed of that torrential branch of the river. The cubic contents of all the gravels on the Pend D'Oreille between Boundary Town and the crossing of the International boundary eighteen miles up the river, is, however, small, and it is improbable that hydraulicing on the scale, for example, of the 'wild cat' plant (costing, it is said, more than a quarter of a million dollars) on Seven Mile creek, can be made to pay anywhere along the river within the points mentioned. Small, easily worked monitors may be installed here and there and find pay gravels sufficient for their needs during a few seasons, as there is abundant evidence of the gold-bearing nature of the Pend D'Oreille gravels wherever they occur on the Canadian side of the line. It must be remembered that the gravels are poor in the precious metal at all points yet prospected in the valley except at Boundary Town: hydraulicing should not be permitted in certain parts of the valley bench-land now cleared and shown to possess fair to good soil for farming and fruit-growing. The Salmon river gravels are also auriferous but of small volume. Throughout the whole interrupted line of the deposits from the Columbia to the forks of the Salmon, the gold is generally rather fine, though coarser metal is found in 'sniping'. The chief source of the gold is doubtless to be sought in the innumerable small quartz veins cutting the volcanics and schists on the north side of the Pend D'Oreille, and cutting the schists to right and left of Lost creek and other branches of the Salmon.

During the season the following observations for magnetic variation, were made. All readings were taken from the axial lines (marked by monument flags) of the slashes cut on the 49th parallel. The instrument used was a 'Brunton Pocket Transit' provided with a needle measuring two and a half inches, and an effective distance of about five inches between peep-hole and vertical thread.

Magnetic variation.

Each of the following values forms the average of several readings at the locality noted:

Midway	22	30,	east.
Five miles west of Midway	57	00*	"
Fifteen miles (about) west of Midway	24	00	"
Nineteen " "	36	00*	"
About five miles east of Okanagan Lake	23	00	"

* Special local attraction.

Okanagan lake	23	45	east.
Cascade City, Kettle river valley	22	50	"
One mile east of Cascade City	22	15	"
Five miles " "	22	10	"
Top, Sophie mountain	23	00	"
West slope, Sophie Mountain	23	45	"
Little Sheep creek valley	24	00	"
Columbia river, Boundary Town	22	50	"
Summit, five miles east of Pend d'Oreille river	23	00	"
South Fork, Salmon river	22	45	"

Notes on the Geology of Anthracite, Alberta.

Mr. H. S. Poole.

A visit was paid in November to the coal fields of Anthracite on the Bow river, where the Canadian Pacific railway enters the Rocky mountains. Through the courtesy of Mr. O. E. S. Whiteside, B. Sc., the superintendent of the mines, an opportunity was afforded me of going underground, and also of seeing the carefully kept plans of the workings.

General structure already described.

So far as the general structure of the field is concerned (further than the discovery of additional seams in the series) but little more information has been acquired from surface exploration than was known when the Geological Survey Report for 1885, B. 1261, was issued, but the mining operations have exposed a series of foldings of the coal-bearing beds throughout the valley of some complexity.

Cretaceous coal measures.

In much of the Cretaceous rocks occupied by the valley of the Bow river in this locality, the river has at some time or other taken its course, and by its shifting channel cut the coal-bearing series down to the general level of its present bed. At a later date the valley has been filled with well-worn gravel, in some places to a depth of as much as 200 feet; and this deposit the river is now engaged in removing, but still leaving broad terraces which in some spots no doubt cover over and hide from view outcroppings of the coal strata. It is doubtful if the river has got down to the level it occupied before the deposition of the terrace gravels, and until this has been determined additional caution has to be exercised when mining coal on the uprises of the secondary folds below the stream, lest connection be unexpectedly made with the water-soaked gravels of an ancient channel. The slope on 'A' seam has been carried down 684 feet.

Caution urged in mining.

The coal seams crop on the northern side of the valley, with a varying degree of inclination to the southward, but so far a continuity

Connection with coal of Canmore not proved.

of the seams of anthracite with those of bituminous coal at Canmore, ten miles distant, has not been traced, and no natural exposures are known in the intervening ground. To the northward, on the Cascade river where the same series is exposed, explorations have been made and prospectors report finding the quality of the coal change from anthracite to bituminous within a remarkably short distance. On the south side of the valley there is also a lack of natural exposures and heavy deposits of gravel interfere with the development of the structure to the deep of the workings along the crop. Underground

Folds of strata.

operations have sufficiently exploited the field to show that the strata have been thrown into folds, having a course somewhat diagonal to the general line of strike, N.W. and S.E., and more to the southward. The chief folds incline and broaden in that direction, but their determination has not been made out. It may be suggested, however, that

Faults.

cross faults, with downthrows to the S.E., carry them to the north-east, near the junction of the Bow and Cascade rivers. The workings at Anthracite proved one such main fold, with a southerly dip varying from 20° to 50°, and with the axis of the trough directed to the south-east and turned up rapidly to the vertical, or in places overhanging on the south side. This south side has been followed upwards for 300 feet, but the structure still further southward has not yet been proved. Further down the valley, a lateral displacement of over 2,000 feet is presumed to have occurred, and while the orogenetic movements have not, at Canmore, eliminated much of the volatile matter of the coal, they have greatly altered the associated measures.

Mr. Whiteside does not consider he has yet obtained sufficient data to satisfactorily describe and illustrate this field, but from operations now in progress at Canmore, he hopes shortly to be enabled to do this.

Sections given by Mr. Whiteside.

The following are revised sections of the coal seams of the Anthracite series, in descending order:

		Ft.	In.	Ft.	In.
'B' seam:—	Mining	1	0		
	Slate	0	7		
	Coal after slating	4	4		
	Slate	0	0½		
	Mining	0	5½		
				6	5
	Measures			125	0
'A' seam:—	Mining	0	3		
	Coal	1	0		
	Slate	0	1½		
	Coal	4	9½		
	Mining	0	2		
				6	4
	Measures			110	0

No. 1 seam :—Bone and dirt	1	3		
Coal	2	0		
Slate	0	2		
Coal	0	5		
Slate	0	2		
Mining	1	2		
Slate	0	1		
Coal	0	5		
Slate	0	4		
Coal	1	2		
Mining	0	2		
			7	4
Measures			90	0
No. 2 seam :—Coal	2	2 to 3 ft. 3 in.		
Slate	0	4		
Mining	0	6		
			3	0
Measures			83	0
Mining	0	10		
Coal	1	2		
Slate	1	6		
Coal	1	8		
			5	2

The Region South-west of Fort Smith, Slave River, N.W.T.

Mr. Charles Camsell.

The following report is based on work which was carried out during the season of 1902, in the country to the south-west of Fort Smith, in the angle between the Peace river and the Great Slave river. Area included in report.

On receiving my instructions from Dr. Bell, I left Winnipeg on June 3 for Edmonton, where I spent a few days in obtaining supplies and making other arrangements for my trip. Here I also hired Duncan Mackay as canoeman, and he was my sole companion for the greater part of the summer. The trip to Athabasca landing took much more time than is usual, owing to the fact that nearly all the bridges had been washed away by the unusually high water, and our canoe which we were also transporting was very useful in ferrying supplies across the streams.

We reached Athabasca landing on the 16th and left next morning for Fort Smith in our canoe. The rapids on the Athabasca river were run without any mishap, and we arrived at Fort Smith on July 1.

A canoe trip up the Salt river being part of the programme laid down in my instructions, I decided to make this at once before the water Track survey of Salt river.

got too low for navigation, and, even at this date I was informed by the residents of Fort Smith that I would not get far up. However, we left Fort Smith on July 3, and spent a week in making a track-survey of Salt river, as well as an examination of the country on both sides of the stream. Mr. McConnell in the summer of 1887 ascended Salt river as far as the brine springs, and his account appears in the reports for that year. We were only able to get about 20 miles higher up than Mr. McConnell, when the stream became too shallow and choked with trees, for canoe navigation.

Salt springs.

The Salt river enters the Slave river about 18 miles below Fort Smith, and is about 40 yards wide at its mouth. At the time we passed up, it had little or no current for some distance. The water is quite fit for drinking for about three miles up, but above this becomes more and more salty until we get to the brine springs at the forks of the river. Above this the amount of salt held in solution decreases in quantity, but the water is still unfit to drink. Its general direction is about south (magnetic) as far as the forks at 20 miles from the mouth, then it turns sharply to the east and was still flowing from this direction when we turned back.

Five miles up from the mouth, the banks of the stream suddenly rise from five feet to thirty feet and are of alluvial origin; beyond this point the height gradually decreases to the springs, where it is only about six feet, but on going higher up stream and away from the Salt plain, the banks soon reach their former height of thirty feet. This would show that the Salt plain, which runs parallel with a steep escarpment to the west of the river, lies in a depression that is greatest just along the base of this escarpment.

Steep escarpment.

The escarpment itself is about 210 feet high, with a rather steep slope, generally well wooded with poplar and spruce, but showing here and there outcropping strata of limestone, and running in a general direction about north-west and south-east. We entered the Salt plain about ten miles above the mouth of the river; though from the river one does not notice it, as the banks are everywhere thickly wooded by a belt of timber 100 to 200 yards in width. The greatest breadth of the Salt plain does not exceed eight miles from north-east to south-west and its least breadth is about two miles. Its length could not be determined accurately; but I know that it is at least fifteen miles. It is by no means an unbroken stretch of prairie land, but is interspersed at short intervals with clumps and groves of poplar and spruce; and on going northward the wooded areas gradually increase until forest predominates over prairie. In the neighbourhood of the brine

springs the ground is barren of vegetation and numerous small saline lakes and ponds appear here and there. On other parts of the prairie, grass grows in abundance, affording splendid feed for cattle and horses, and indeed the latter animals are never housed, but roam over the prairie all winter and are in splendid condition by the spring.

Sink-holes investigated.

Trips were made into the interior in several places on both sides of the river and particularly on the west side to examine the nature and occurrence of the sink-holes which appear on the sides and top of the escarpment. A description of these will be given further on.

The brine springs, which occur near the forks of the river and from which the Hudson's Bay Co. gets its supply of salt, were located and an observation for latitude taken to determine their position more accurately. Other brine springs were also discovered about six miles south-east of the forks. A much larger accumulation of salt occurs here, but on account of their being some distance from navigable waters, the salt from these springs has never been utilized. All these springs are situated along the base of the escarpment and at the time of our visit were nearly dry. They generally rise from among an accumulation of granite boulders and flow thence into shallow basins, where the water is evaporated, leaving a deposit of coarse salt. The stumps of trees, the boulders and the ground in the neighbourhood of the springs are all incrusted with the salt.

Fish and game plentiful.

Fish are plentiful in the waters of Salt river, and the brine springs are a resort for moose and bear, which come there to lick the salt. A skull of a wood buffalo was also seen here, showing that these animals also frequented the neighbourhood, though none have been seen in the neighbourhood for some years.

We returned to Fort Smith on July 9, and immediately set about making preparations for a trip overland with horses. It was the original intention to make this overland trip with a wagon or cart, but I found that it would be useless to attempt it, as the only place where a cart could be used would be on the Salt plain and many miles of bush road would have to be cut to get there, and beyond that a trail would again have to be cut. So I abandoned the idea and took pack-horses instead, at the same time hiring another man to act as guide.

We again left Fort Smith on July 12, this time with pack horses, taking provisions for two weeks as well as an extra supply to leave in a cache on Little Buffalo river, for I contemplated a canoe trip up that stream later in the season.

Timber and hay.

For the first 10 miles after leaving Fort Smith the trail runs in a general direction S. 25 W. magnetic, through a level or slightly rolling country, well wooded with poplar, spruce and Banksian pine, with occasional swamps in which large quantities of hay could be cut. Then the forest gradually shades off into open fertile prairie, which extends up to Salt river, the river itself being fringed with a dense growth of poplars and willows. The crossing of Salt river is made just below the second large branch of the stream, and is rather a risky undertaking, as the bed of the river consists of a soft tenacious clay which would easily mire a heavily laden pack-horse. We camped the first night out from Fort Smith at this crossing, getting our drinking water from a small pond on the south side of the river.

Our course from the crossing was S. 20° W. (mag.) leading straight towards a bay in the escarpment to the west. After passing through the belt of timber along the river bank, we again emerged into the prairie country which extends up to the base of the escarpment. This part of the prairie is not nearly so fertile as that east of the river, and although it is largely covered with grass, there are a number of white barren alkaline patches which increase in size as the escarpment is approached. The first branch of the Salt river is forded three miles from the crossing of the main stream. It is only about twelve feet wide, and one foot deep with a gravel and clay bottom, and the water is very salty to the taste. A number of rounded wooded hills, 20 to 60 feet high, were noticed near this place standing like islands on the prairie and generally surrounded on all sides by barren patches. These hills were probably at one time connected with the escarpment to the west, but being composed of harder strata than the rest have resisted the action of erosion which caused the escarpment to retreat to its present line, leaving them as residuals to mark the line at which the face of the escarpment once stood. Scattered here and there around the base of these hills are boulders of granite and other igneous rocks. An exposure of much weathered limestone was crossed on the prairie about two miles from the escarpment. As the base of this is approached the barren patches give place to small saline lakes and ponds, the neighbourhood of which is very boggy and marshy.

Hills marking ancient face of escarpment.

The trail mounts the escarpment to the right of a small fresh water creek which enters the Salt plain through a narrow wooded valley and joins the first branch of the Salt river. From the top of the escarpment the trail runs three miles and a half through a very broken hilly country, timbered with poplar and Banksian pine; the roughness being due to numerous large deep sink-holes. The deepest of these would be about 50 feet. No exposures of rock were seen on their

Sink-holes.

sides which were all covered with a considerable depth of light-coloured sandy waste. Just beyond these we entered an area of burnt rolling country which extends for 3 miles along the trail. This area had been burnt probably 25 years ago and is now covered with a thick growth of young Banksian pines.

Leaving this burnt area, a short steep descent is made in low swampy land with several muskegs. It is only in these muskegs that any deep moss is seen, the greater part of the country being dry with little or no covering of moss.

Gradually again going south-westward the country becomes more open and dry until after about four miles we get into what the natives call prairie, but it is really only a succession of small prairie openings, few of which are more than 150 yards long. We travelled through this for about five miles and seemed to be going diagonally across it. The prairie itself runs nearly north and south. It is said to continue with frequent interruptions nearly as far down as Great Slave lake, running parallel with the Little Buffalo river and on both sides of it. It is in this open country that the wood buffalo are to be found. Wood buffalo. While making a camp on the shore of Flat Grass lake we disturbed a small band of ten or twelve of these animals, but we were unfortunate in not getting a sight of them. Although they are protected by law they do not seem to be increasing as fast as they should. The Indians are very careful now that none should be killed by hunters; but are not so particular in protecting them from the timber wolves, which are the cause of the lack of increase. A full-grown animal can easily take care of itself, but the young buffalo fall an easy prey to wolves. If some inducement were offered the natives for the killing of timber wolves there would be a greater increase in the number of the buffalo.

Flat Grass lake lies about half-way across the so-called prairie and is a shallow marshy lake a mile and a half long by half a mile wide. The shores are covered for fifty or sixty yards with thick grass. Ducks were plentiful in the lake. Many ripe strawberries were seen on its shores.

Four miles and a half from Flat Grass lake the trail strikes Little Buffalo river, which is here about 25 feet wide with a good current, and many large boulders in its bed, which form small rapids at various points. The trail follows the east bank for another five miles through a thickly wooded country, the greater part of which had been burnt, probably twenty years ago. A crossing is then made to the west side of the river at a point where the water is only about eight Little Buffalo river.

inches deep and very rapid. For about twelve miles the trail then follows the west bank of the stream, touching it here and there, but frequently being a mile or more away from it.

Here also the country had nearly all been burnt at the same time as that on the east side. The trail on the west side is seldom used in summer and runs through a very swampy country, occasionally rising on to narrow sandy ridges, wooded with poplar and Banksian pine. Some distance ahead could be seen a low range of hills running nearly true north and south and where the Little Buffalo river cuts through these, a second crossing is made back to the east, or locally the south side. These hills are known to the Indians by the name of Nini-Shith, or fallen tree hills; so called on account of the great number of fallen trees upon them. Their highest points do not exceed 150 feet, and where the river cuts through them, they are seen to consist entirely of sand. To the south-east they could be seen stretching away for eight or ten miles in a series of high rounded hills connected with each other by lower ridges. To the north-west all the ridges seem to be merged into one much broader than the rest.

On the east side of the river we were still in burnt country and I may say, that this area extends for a distance of 25 or 30 miles from north-east to south-west and runs as far to the north-west and south-east as could be seen from the top of the hills.

About six miles beyond the second crossing of the river, we ascended a ridge, 100 feet high and followed this in a south-easterly direction for nearly three miles. The ridge is very steep and narrow, resembling a moraine, and is composed entirely of sand, and from its highest point a good view of the country was had. To the south-west, Cariboo mountain could be seen on the horizon, looking blue in the distance, and about five miles away stretched another ridge almost parallel to the one we were on and hiding the view between that and Cariboo mountain. To the north-west could be seen the shallow valley of the Little Buffalo and to the east five or six miles away, another ridge parallel to this one and higher in a good many places. Between the two ridges lay a large muskeg, mostly dry, but here and there showing small gleaming patches of water. Judging by the shells on the muskeg, the whole must have been covered with water at no very remote period.

Cariboo mountain.

Since crossing the Little Buffalo river the last time, we had been following no trail at all, but on the top of the ridge, we found an old buffalo trail, and had fairly good going to the end of the ridge. Old buffalo wallows were also numerous on its top.

Leaving this we descended to a muskeg, where we had great difficulty with the horses on account of the boggy nature of the ground. In several places the moss is dry and thick, and a fine black powdery dust rises behind the moving animals. The muskeg is treeless, except for a few small stunted spruces.

Fine spruce and poplar.

On crossing the muskeg the land begins to slope almost imperceptibly up to a height of 80 feet, and on the northern slope of the hill there is as fine a growth of spruce and poplar as I have seen north of the Peace river. Spruce trees 26 inches in diameter and poplars 18 to 20 inches are common. There is no underbrush, and the ground is covered with about four inches of soft moss, the whole having a park-like appearance. On the top of the hill the timber becomes much smaller and the growth thicker, so that we had some difficulty in forcing a way through.

Three miles beyond this last ridge we crossed another, but not before making a great detour to avoid Brabant lake, which is about two miles long by half a mile wide, and without any outlet. Descending into the next valley, we passed Loon lake on the west side and about a mile beyond it reached the shore of a large lake called by the Indians Moose lake. This is a beautiful sheet of water about eight miles long from east to west, and about four miles wide. A small creek flows from the west end into the Little Buffalo river, but it is not navigable and the Indians usually carry their canoes across a portage to get into the lake.

Return to Fort Smith.

I had hoped to be able to reach the Cariboo mountain, but I now saw that it would be impossible to do so with horses as there is no trail, and the country is practically a huge muskeg up to the base of the mountain. So after sketching in the shores of Moose lake I was reluctantly compelled to return to Fort Smith, arriving there on July 22, after having been away 11 days. At Fort Smith I gathered as much information as possible about the canoe route from hence to the Peace river via the Little Buffalo and Jackfish rivers. Very few of the Indians had ever been over it, and then only during high water in the spring, and these doubted whether it could be followed at this season of the year, and advised me to go in a small birch-bark hunting canoe. To hire a guide for the whole trip was impossible for several reasons, one of which was that an epidemic of sickness had visited Fort Smith and nearly every able-bodied Indian was laid up; so I had to content myself with a rough sketch of the route, supplemented by a good deal of inaccurate information. On the 2nd of August I started again with Mackay, for the last time from Fort Smith

Going down to the mouth of the Salt river, we camped there and succeeded in inducing an old Indian to go with us as far up the Little Buffalo river as the point at which the summer trail first strikes it. Although he was a man about 60 years of age and could not do much work, his knowledge of the route saved us a good deal of time, particularly in finding the portage.

Ascend Little Buffalo river.

Leaving the mouth of Salt river we again ascended that stream for twelve miles before coming to the trail leading to the Little Buffalo river. A short portage of some 30 yards is first made into a little pond about 100 yards long, and from it the trail mounts a small rise of twenty feet and enters a fine country sparely wooded with poplar and green alder. This kind of country continues for half a mile when the trail runs into an open prairie, stretching nearly to the Little Buffalo river. This is part of the Salt plain, and like the other parts, is broken here and there by strips of timber. The total length of the portage is nearly seven miles and its general direction S. 70 W. (mag.) About a mile to the south of the portage trail is a continuation of the escapment mentioned before, which here runs parallel with the trail; but after crossing the Little Buffalo river it bends more to the north and seems to decrease slightly in height. Exposures of limestone can be seen in several places along its face. Along its base are a number of small saline lakes and here and there barren alkaline patches occur. As a rule, however, the prairie is covered with a luxuriant growth of tall grass. The great difficulty in traversing the portage is the scarcity of drinking water, and the only place where this could be obtained was a small pond three-quarters of a mile north of our camp of Aug. 4. From this point to near the Little Buffalo river, water had to be carried, as that of the Lop-stick creek itself is not fit to drink. In a season of greater rainfall, however, there would not be the same difficulty. For the last three miles the trail runs through very wet and boggy country, but the water in the numerous ponds is always salty.

Drinking water scarce.

Lop-stick creek.

The portage ends in Lop-stick creek, which is not more than 10 feet wide and exceedingly crooked. It is so called because of a tall lop-stick, standing on its bank, which marks the point at which the trail strikes the creek, and which can be seen for a distaunce of two miles.

Like the Salt river, Lop-stick creek is fed from springs along the base of the escarpment and the water is consequently salty in taste and has a bluish colour, while the bed of the creek is covered with a thick green moss. To the south the course of the stream can be traced by a line of spruce and willows, and it empties into the Little

Buffalo river about two miles north-west of the portage. At the time we went through, the creek as well as the ponds on either side were teeming with ducks.

At the junction of the Lop-stick creek with the Little Buffalo river, the latter is about 60 feet wide with little or no current. The water is deep but not clear. The banks, about four feet high, are well wooded with spruce and willow, with a good deal of swamp grass near the water. The Little Buffalo river empties into Great Slave lake a few miles west of Fort Resolution, and is frequently used in the early spring as a canoe-route from Fort Resolution to Fort Smith, as it breaks up earlier than the Slave river. It has been explored as far up as the Salt river portage, but hitherto no explorer has been beyond this point. We were soon made aware of this fact by finding at short intervals huge trees lying across from one bank to the other, all of which had to be cut out to permit a passage for the canoe. The water of the river is not very good to drink, but still it is much better than that of the Lop-stick creek. Description of Little Buffalo river.

The course of the river above the Lop-stick creek is slightly east of south up to the base of the escarpment, when it bends more to the west, and it is exceedingly crooked. Exposures of limestone are first seen where the river emerges from the higher land, and here also is a cliff of impure gypsum ten feet high at the base of the escarpment. The height of the banks soon increases to sixty or seventy feet and the current becomes much swifter. Short shallow rapids are formed here and there, either by accumulations of boulders or as a result of the work of beavers.

For six and a half miles above the first exposure of limestone, or as far up as the falls, the valley of the river much resembles a gorge. It averages about 150 yards in width and is altogether out of proportion to the size and volume of the stream, which is only about forty feet wide. The sides are nearly vertical walls of horizontal limestone from seventy to 100 feet in height; and in places where I climbed to the top of these cliffs, I found that the country above and behind them was much cut up with deep sink-holes, in some of which the solid rock was exposed, but as in the case of those seen earlier in the season, the majority of them were lined with debris. The timber here consisted largely of poplar, and in the valley I noticed balsam fir for the first time. Gooseberries, raspberries and saskatoons were seen in great abundance. Valley resembles a gorge.

Half a mile below the falls the river becomes too shallow and rapid for canoe navigation, and here a portage of three-quarters of a mile is

made on the east bank. The trail runs through a broken hilly country wooded entirely with poplars and willows; and the difference in elevation between north and south end of the portage is nearly 100 feet. The river itself makes a bend from the lower end of the portage, first to the south-west and then to the east, and about half-way round this bend are the falls, while above and below for some distance are a series of shallow rapids, the lower ones filled with sharp angular boulders of limestone, and the upper with rounded boulders of igneous origin. There are three separate falls, the lower one being much the greatest. In this one there is a sheer drop of forty feet over the limestone, the upper stratum of which is harder and more resistant than the lower, and consequently the upper overhangs slightly, so that it is possible to walk across the river between the falling water and the cliff, but not without getting wet from the spray. The volume of water falling over was small and its width only about twenty-five feet. There is a deep basin at the foot of the falls almost completely surrounded by vertical walls of limestone 100 feet in height. The middle fall is 100 yards above the lowest and had a drop of about sixteen feet in nearly twice the horizontal distance. It is a more beautiful sight than the other, as it has the form of a crescent and the water falls over thin beds of limestone in a series of short steps. The upper fall is about seventy-five yards above the middle one and has a drop of only five feet. Above this there are shallow rapids as far as the end of the portage. The gorge below the falls measures the distance those falls have receded from the face of the escarpment since the genesis of this part of the river, and shows it to be about six and a half miles. Samples of the limestone and some fossils were collected from this place.

Falls.

Soon after leaving the falls the course of the river turns towards the west and continues in this direction for three miles, when it again bends gradually towards the south, and twelve miles farther on, towards the south-east. There is little of interest to distinguish one part of the river from another and as far up as the summer trail there is merely a succession of shallow rapids, dead water and log jams. A few short portages were made to avoid log jams, the longest of these being 300 yards. Beaver dams were also very numerous, but only the larger new ones were noted. The width of the stream above the falls averages about thirty feet and the banks are usually about four feet high, fringed with grass. The prevailing forest tree is spruce, but tall willows frequently form an archway over the stream.

Beaver dams.

Four miles south of our camp of August 8, we entered an area of country which had been burnt about twenty years ago. This extends

on both sides of the river, for about ten miles, and it is here that many of the log jams occur.

A winter trail from Fort Smith to Bog lake crosses the river about seven miles north-west of the summer trail, and this trail also crosses the Salt river at the forks. It was near this winter trail that on August 11 our old guide turned back, and from here on we had to find our way merely by the aid of a rough map that he made for us.

From the summer trail up to the Nini-shith hills the course of the river is about S. 30° W. magnetic, and it varies little in general character. The valley is generally half a mile wide and only about 25 feet deep, while the adjoining country on either side is a thickly forested, level or gently rolling plain. The only creek of any size entering in this stretch is Sucker creek, flowing in from the east about three miles above the first crossing. It is about thirty feet wide at the junction, but with no current and very little depth of water. Beaver dams are numerous, and shallow rapids are met at nearly every turn, in one of which the bed was seen to be composed of limestone. The country on both sides has here also been burnt, but no log jams occur, as the river is almost entirely fringed with tall willows. Sucker creek.

After passing through the Nini-shith hills the course of the river is nearly west for about six miles, where at the entrance of a small creek from the north it turns sharply to the south again. There is a strong current all the way, but no rapids. The bed of the river is covered with grass and has no boulders. It is probable that the boulders in the river below the Nini-shith hills come from these hills, but in the cut banks none could be seen Areas of good hay are frequent in the valley of the river, which is from 200 yards to a quarter of a mile wide, and in a few places that had been untouched by fire, spruce trees, up to twenty inches in diameter can be seen, but there is no birch or balsam.

At our camp of August 13 the valley of the river is much narrower and the course of the stream is south, gradually bending to the south-east as it approaches a high wooded ridge running east and west. Where the river meets the ridge, cut sand banks 25 and 30 feet high are seen. About half-way down the last stretch, a small creek enters from the west, and on following it up for about 300 yards, I found that it was highly sulphursted, and a strong odour of sulphureted hydrogen sulphide was given off when the moss in the bed of the creek was disturbed. The creek rises in a small pond 40 yards across, and although the water is beautifully clear and the bottom everywhere Sulphur spring.

visible, I could not locate the exact position of the spring which is the source of supply. The taste of the water was distinctly sulphurous and the moss and stumps in the bed of the creek were covered with a white coating.

In its course through the ridge mentioned above, the river becomes very shallow and rapid, and sharp angular boulders of limestone are frequently seen, but no rock in situ. In these rapids on account of the difficulty of cutting out portages, we found it quicker to remove the boulders from the channel and make passages for the canoe. It took us the greater part of a day to get through these rapids, though they only extended for three miles.

Portage route to Moose lake.

A small creek enters from the east just above these rapids, and near the mouth of the creek we found the trail over which the Indians portage their canoes to Moose lake.

Above the Moose lake trail the river widens to 50 feet and we passed a number of beaver dams; but instead of being a hindrance to us, they were a great help by raising the level of the water above them. These dams were generally about two feet high and well constructed with stones and willow brush.

After passing through another low wooded ridge, in which we again encountered a number of rapids, we entered a low swampy country where the river widens to 100 feet or more. Moose creek enters from the south, just above these rapids, and at this point the Little Buffalo river takes a sharp bend to the north-west. Following this course for three miles, we enter a small marshy lake half a mile long and about the same in width. We leave this lake half way down the south shore and in a little more than half a mile enter a larger lake. Both of these lakes are shallow, and the bottom of each is covered with a soft slimy mud, into which a paddle can easily be thrust three or four feet. The shores of the lakes are covered with grass and willows.

The river enters the second lake about half a mile from its outlet on the west side, and a short distance up becomes very difficult to navigate, for the willows from either bank meet in the centre and completely block the passage. The banks are about 2 feet high and are continually caving in so that the stream has to cut new channels for itself.

Bog lake.

Three miles above the lake we reached the forks of the river, the left branch coming from a large lake one-third of a mile to the west. The Indians call this Thul-tue or Bog lake. Its length was estimated

to be about eight or nine miles and its greatest width lying about nearly north and south. It contains plenty of fish and is a favourite winter resort for the Indians trading at Fort Smith. At one time the lake probably extended over all of the river valley as far down as the last mentioned rapids, for the whole of this part lies in a well defined valley and is still very wet and marshy and covered with swamp grass and willows, while the river is confined to its present bed only by a low narrow rise on either bank, and behind this it is very boggy and marshy and rather dangerous for walking. The deepening of the channel at these rapids, however, caused the water to drain off, lowering the lake to its present level and shore line. The water of the Thul-tue branch is very muddy, while that of the main stream is clear and amber-coloured.

Half a mile above the forks a small stream eight feet wide with a strong current enters from the south-east, and this we at first took to be the right stream to follow ; but on going up a quarter of a mile found it too narrow and crooked for the canoe. I have since learned that this creek rises in a large lake to the south-east, from which a portage is made into the Jackfish river. The other stream, judging by the width of its bed, is the main stream, but on ascending it for half a mile we found it almost dry ; that is to say, where the water broke through an old beaver dam, it was only a few inches wide. According to our Indian map this was undoubtedly the right stream to follow, so on the morning of August 18, we made a long portage to avoid a succession of old beaver dams until we came to a large new dam, above which we found plenty of water and good paddling. In this part of the river, new dams are built nearly every year, each one a short distance above the one of the previous year, until for a distance of two miles and a half there is a series of dams at intervals of 50 or 100 yards.

Beaver dams frequent.

Three miles above the last new beaver dam we entered a small muskeg lake * about one mile long. North, east and west of this the country is an immense muskeg, while to the south is a low wooded ridge of poplar, spruce and Banksian pine. The muskeg as well as parts of the ridge had been burnt years ago.

We leave the lake half-way down the west side, and after going westerly for three miles, the stream suddenly contracts to a width of a few feet and is so blocked with willows that we were unable to force a way through for the canoe.

At this place we spent half a day searching for the portage trail to Jackfish river, and finding none decided to cut one for ourselves. The distance across is only four miles and a half, but it took us two

Cut portage trail to Jackfish river.

* Marsh.

days to make the portage. Cariboo mountain could be seen to the south and taking a course S. 10° W. magnetic, we made straight for three rounded peaks that could be seen on the top of the mountain. Our trail for the first three miles took us through burnt open muskeg, with several boulder ridges covered by poplar and pine which constitute the height of land between the Little Buffalo and Jackfish rivers. The last mile and a half lay through swamps and muskegs; and over the whole trail not a great deal of cutting had to be done except at the Jackfish river, which is fringed with a dense growth of spruces, alders and willows. We got everything over to the Jackfish river on the afternoon of August 21, and the same evening started down stream.

Where we first saw the Jackfish river it is 40 or 50 feet wide with a sluggish current and very muddy water. Its banks are of clay and about five feet high, fringed with grass and wooded with fine large spruces, some of which are 30 inches in diameter, and like the Little Buffalo river, log jams are of common occurrence. The river runs
Topography. parallel with the Cariboo mountain, which can be seen, eight or ten miles to the south-west, rising with a long gentle slope to a height of perhaps 1,500 to 2,000 feet above the level of the plain. The valley is very wide and shallow, occupied largely by open muskegs, and through it the river meanders in a very sinuous course. We took seven days in going down to the Peace river, though when the river is in flood it can be done in three days.

The general course of the Jackfish river from the portage down to Jackfish lake is about south-east. It resembles the Little Buffalo river in the frequency with which shallow rapids, log jams, and beaver dams occur; the rapids here also being formed by accumulations of boulders of granite and other igneous rocks. Hay may be obtained in large quantities in the swamps near Jackfish lake.

Jackfish lake. Jackfish lake, through which the river runs, is a narrow sheet of water measuring about four miles in length, the south end of which approaches much nearer to Cariboo mountain than any part of the river. The shores are usually grassy, but in several places gravel and boulders are seen. The outlet is about half way down the east arm on the north side, where the river is about 100 feet wide and the banks hardly rise above the water.

For fifteen miles below Jackfish lake the course of the river is slightly north of east, running through a low swampy country wooded with spruce and willow, and in which a few low mounds rise above the level of the plain. As we approached the end of this reach the

banks gradually became higher and the current much swifter, until we again got into a succession of rapids, where gravel banks were first seen. Passing through these rapids the river takes a sharp bend to the south and for the next ten miles the only obstructions to navigation are the log jams. Hills 150 feet in height rise on either side of the river, and soon after passing through these, we again entered a series of shallow rapids, none of which were bad enough to compel us to portage, but several were too shallow to run.

We were delayed at our camp of August 23 by rain, and soon after leaving it we entered a shallow grassy expansion of the river. This in the early spring or in a season of high water would be a lake three miles long by one mile wide, but was now almost dry. A mile and a half below this we passed the mouth of Berry creek, a very muddy stream thirty feet wide which joins the Jackfish river from the west. From thence to Gravel creek, a distance of about seven miles, the current is very slack and the river frequently choked with driftwood.

Gravel creek. Gravel creek enters from the west, but unlike Berry creek, it is a clear water stream about fifty feet wide. It flows with a strong current and has a fine gravel bed. The bar at the mouth was prospected, but no indication of gold could be found. Below Gravel creek the Jackfish becomes very rapid and turns more towards the east ; cut banks alternating with long sandy points ; and ten miles below a portage of ninety paces is made across a point on the left hand side to avoid a big log jam. A mile and a half below this a second portage of 780 paces is made on the same side. Here we were led to suppose that the river ran underground, and although it does not actually do so, the huge pile of driftwood that has collected and lain there for years has become so filled in with sand and mud that it looks as if the river did run underground, and one can walk across dryshod. The same thing occurs again some three miles below where another portage 180 paces in length is made on the right hand bank of the river. These three portages are the only ones that have to be made in going down with the high water.

High sand bank. The banks in the neighbourhood of the portages are about ten feet high and are everywhere wooded with fine large spruce, but about ten miles below, the river cuts into a sand bank forty feet high. From the top of this the country on both sides of the river is seen to be very flat with few rises. It is thickly wooded and the only openings to be seen are swamps. Below the cut sand-bank for about 15 miles the current is not strong and the river is very crooked ; then we entered a long succession of rapids which continue for nearly 20 miles. The river in these rapids

passes between high hills wooded with poplar and Banksian pine, and we frequently saw cut banks of gravel or clay. Most of the rapids were navigable, as the volume of the water was considerably increased by the two large tributaries mentioned above. Near the end of these rapids I noticed several sulphur springs resembling those on the Little Buffalo river.

From this point to the Peace river the course of the stream is slightly north of east and is very crooked. No more rapids or log jams are met with, and the river winds through a deep wooded valley in which spruce is the prevailing forest tree. As the Peace river is approached, however, the valley widens to about half a mile, and the spruce is replaced almost entirely by poplars and particularly the balsam poplar.

Mouth of Jackfish river.

We reached the mouth of the Jackfish river on August 27, hoping to find some Indians there, but, although there are a few houses, some on each side of the stream, they were all unoccupied at the time. The Jackfish river is here nearly 50 yards wide, without visible current, and it enters the Peace river, as near as I could judge, about 15 miles above the rapids at Peace point and about 130 miles below Little Red river post.

From the mouth of the Jackfish we had the choice of two routes out to Edmonton, and selected the one *via* Peace river and Lesser Slave lake, as being the easier. So, after taking bearings on all prominent points in its neighbourhood, I closed my track-survey and left the Jackfish river on August 28 for Edmonton, reaching that place on October 9 and Winnipeg on October 13.

Acknowledgments due.

My acknowledgments are due to the officers of the Hudson's Bay Company on the Slave and Peace rivers for much kindness and assistance, and particularly to Mr. Brabant, of Fort Smith, where I made my headquarters while exploring the district west of that point.

The topography of the country travelled over is very uniform and simple, and the most pronounced feature is the steep escarpment at the base of which the brine springs are situated. If a cross section were taken from Fort Smith south-west to Cariboo mountain it would show—first, the comparatively narrow level region bordering the Slave river, dipping very slightly as we get into the Salt plain, then the abrupt rise of over 200 feet to the top of the escarpment, much broken near its edge by numerous deep sink-holes. Beyond this an almost level upland stretching to the Nini-shith hills, which rise 100 feet above the general level of the plain; then going south-westward of

these a gently undulating surface rising slightly to the height of land, then dipping again to the Jackfish river valley in which the stream has carved a smaller valley, then rising once more with a long easy slope to the Cariboo mountain.

With regard to the geology of the region, I may say that nearly the whole area is covered by rocks of Devonian age, though, as they are undisturbed and lie horizontally, it is only in a few places that exposures appear on the surface.

Gypsum and mineral tar.

At La Butte, on the Slave river, 40 miles above Smith Landing, there is an outcrop of limestone associated with some gypsum and mineral tar; but no fossils were found by which it could be compared with the exposures in the escarpment at the brine springs; lithologically and in their associations with beds of gypsum they appear very similar. At Stone island also, about 25 miles below La Butte, limestone is exposed, and is here seen to rest directly on rocks of Archæan age.

The escarpment already mentioned near the brine springs was examined in several places. Its greatest height above the Salt river was found to be 210 feet, dropping to 150 at the Little Buffalo river, and its general direction about north-west and south-east. Three miles north of the forks of Salt river, where cliffs are exposed, they are seen to consist entirely of limestone, lying horizontally. But one mile south of the forks a bed of gypsum 20 feet thick is exposed near the base, and interbedded with this is a thin layer of red clay, while underlying the gypsum, and seen in the bed of the Salt river is a thick deposit of clay. Near here are the brine springs, but it was impossible to determine the source of the salt. Specimens of the limestone and gypsum were collected, as well as a few fossils from the cliffs north of the forks.

Sink-holes examined.

Deep sink-holes were mentioned as occurring in several places, and particularly where the summer trail mounts the escarpment, on the sides and top behind the brine springs, and also below the falls on Buffalo river. In only one or two of the smaller and more recent holes behind the brine springs was any rock exposed on the sides, and in these cases it was limestone. In all the others examined, because they were of earlier formation, the sides were covered with surface deposits, and sloped sharply down to a point in the centre resembling a funnel. Some were wooded to the bottom, particularly those on the Little Buffalo river. The majority of them were dry in July, but some of the larger and deeper ones contained fresh water, and these

may be the source of supply for the brine springs, at the base of the escarpment. The amount of surface water has a very marked effect on the volume of the springs, and in the spring the flow is much greater than later in the summer. The sink-holes vary in depth from five feet to 50 feet or more. An isolated sink-hole 25 feet deep was seen along the trail near Flat Grass lake, and the broken nature of the surface here would seem to indicate it was underlaid by beds of gypsum.

Cliffs of limestone and impure gypsum.

Cliffs of impure gypsum ten feet high occur on the Little Buffalo river where it emerges from the face of the escarpment, and in the gorge above this we saw cliffs of massive limestone rising perpendicularly from the water to a height of 60 feet or more. Very thin beds of gypsum occur with the limestone and the rock lies horizontally and contain few fossils. At the foot of the falls the cliffs are 100 feet high. Here the lower beds are very thick and contain a good deal of gypsum scattered in crystals throughout the rock, consequently are very soft, while the upper strata are much harder and lie in thin beds. Crystals of iron pyrites occur in the upper strata.

On the floor of the Salt plain, three miles and a half south of the forks is an outcrop of limestone over which the summer trail passes. A specimen of this is submitted as showing the extent to which decomposition has gone. The whole outcrop is honeycombed, leaving only a skeleton of the harder parts. Another example of weathering is shown in the igneous boulders scattered over the clay flats in the vicinity of this outcrop of limestone. The boulders are generally of granite and are so much weathered around the base for about six inches up that they now resemble large mushrooms.

No exposures of the older rocks occur on the Jackfish river, though a few miles below the Sulphur springs large angular blocks of limestone are so common that the rock in places cannot be far beneath the surface. Recent deposits of sand and gravel however, are frequent in the lower part of the river. Exposures of clay occur just below the Sulphar springs and these are overlaid by about 20 feet of sand in which thin beds of peat occur.

Evidence of glacial action.

Evidences of glaciation in the form of numerous glacial erratics are everywhere visible, and particularly on the portage over the height of land between the Little Buffalo and Jackfish rivers. Nearly all of the rapids in each of these rivers are formed by accumulations of glacial boulders. No glacial striæ, however, were seen on any of the exposures of limestone. The Nini-sheth hills are very probably eskers, and seem to have no definite regularity. They are composed of fine sand

and have a general direction of nearly true north and south. On the north side of the Little Buffalo river they merge into one broad ridge, while on the south side they are split up into several rather sharp ridges, which again almost coalesce so as to inclose a large basin-shaped hollow, which was at one time occupied by water, but is now an almost dry muskeg. Similar smaller ridges occur on the Jackfish river about Jackfish lake.

NOTE.—All bearings mentioned in the above report are magnetic.

THE BLAIRMORE-FRANK COAL-FIELDS.

Mr. W. W. Leach.

Area of field-work.

The Blairmore-Frank coal-fields are situated a few miles east of the summit of Crows Nest Pass and are separated from the Crows Nest Coal-field proper by the main range of the Rocky mountains. To the south they are cut off by the Devono-Carboniferous rocks of the Flathead range. To the north the limit of coal-bearing rocks is not as yet defined, but it is certain that it extends a considerable distance north of the present map. Eastward the belt of Lower Cretaceous coal-bearing rocks extends about fourteen miles from Crows Nest lake, when it is overlaid by rocks of Upper Cretaceous and Laramie age, also coal-bearing, but to a lesser extent. The accompanying map shows part of the latter formation.

The existence of valuable coal deposits in this district was noted by Dr. Dawson in his 'Report on the region in the vicinity of the Bow and Belly rivers (*See* Report of Progress, 1882–84, pages 101c. and 103c.); and again in his report on that portion of the Rocky Mts., between latitudes 49° and 51°30', (*See* Annual Report, 1885, pages 58B and 69B.)

Prospecting.

Up to within the last two or three years very little had been done to exploit these fields, lack of transportation facilities being the chief drawback; the construction of the Crows Nest Branch of the Canadian Pacific Railway, however, crossing as it does the coal-bearing strata almost at right angles, has removed this difficulty; and within the past few years a great deal of work has been done, chiefly prospecting and surface stripping, so that it is now known that the productive coal measures are very much more extensive than was at first anticipated.

General description.

This region, within the boundaries examined this year (viz: Tps. 7, 8, 9 and 10, R. 2, 3, 4 and 5 west of the 5th Meridian) is, roughly speaking, divided into almost equal parts by the Livingstone range.

To the west of this range and between it and the main range of the Rockies the country is somewhat rough and broken, and generally timbered. To the east of the Livingstone range the character of the country changes abruptly, the rough wooded hills giving place to low, rounded, grassy ridges, gradually decreasing in height until the open prairie valley of the Old Man river is reached. The Livingstone range itself is a rather remarkable anticlinal ridge, unbroken except where the Crows Nest and Old Man rivers have cut narrow gorge-like channels which are locally known as 'Gaps.' North of the 'Gap' of the Old Man river the range appears to continne for some miles. To the south, the Livingstone range (proper) ends at the Crows Nest river, although Bluff and Turtle mountains may be considered as a spur from the main range.

Direction of rocks.

The general direction of the valleys and ridges throughout this area is north and south, coinciding with the strike of the rocks, and the Crows Nest and the uppper part of the Old Man rivers cut the strata at nearly right angles.

Horizon of rocks.

The rocks of this region may be divided into three main divisions, viz: the Devono-Carboniferous, the Middle and Lower Cretaceous, and the Upper Cretaceous, in which may possibly be included part of the Laramie; of these, the two latter are coal-bearing.

The Devono-Carboniferous rocks consist principally of limestone with some beds of quartzite towards the top.

Cretaceous.

By far the most important series in this area from an economic standpoint, is the secon l division or Middle and Lower Cretaceous, which includes the principal coal seams. Wherever seen these beds appear conformable with the Upper Cretaceous and Laramie, so that until the country has been examined in greater detail and the fossils collected determined, it is impossible to draw a clearly defined line between this and the third division. For descriptive purposes, however, it will be assumed here that the volcanic intercalation, mentioned hereafter, represents the top of this second division.

Lower Cretaceous.

The principal rocks in these beds in ascending order are as follows, the various thicknesses given being only approximate:—

1. Gray and black shales with a few thin arenaceous beds, 700 feet.

Thickness of divisions.

2. Productive coal measures, 740 feet.

3. Hard cherty conglomerate, in places replaced by very hard silicious sandstone, 30 feet.

Geological Survey of Canada
ROBERT BELL M.D. Sc.D. [illegible] LL.D. F.R.S. ACTING DIRECTOR
1903

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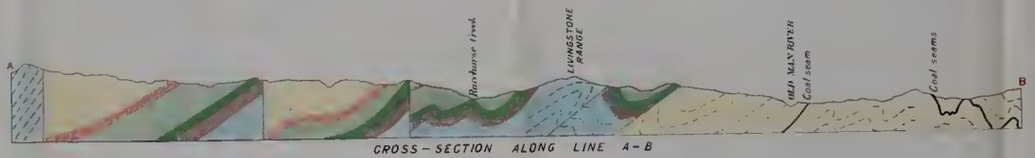
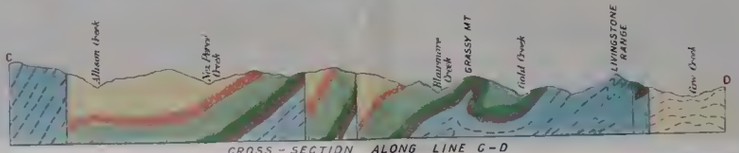


CROSS-SECTION ALONG LINE A-B



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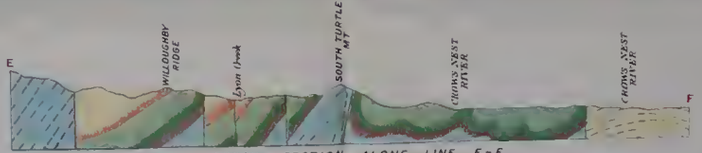


CROSS-SECTION ALONG LINE E-F

GEOLOGICAL SKETCH MAP
of part of the
BLAIRMORE-FRANK COAL-FIELDS
SOUTHERN ALBERTA

To illustrate Report
by
W.W. LEACH, B.A.Sc.

Scale 160 Chains to 1 inch
Chains 80 40 0 1 2 3 4 5 6 7 Miles

4. Light-coloured sandy shales and shaly sandstones with some characteristic dark greenish and purplish shaly sandstone and massive seal-brown weathering dolomitic sandstone. One thin bed of shaly limestone was noted in several widely separated localities and may prove of value as determining a definite horizon. Just below the volcanics, near Ma Butte, a bed of hard cherty conglomerate was seen; this was much finer grained than that occurring above the coal and was not noted elsewhere, 1,850 feet.

5. Volcanics, consisting essentially of a very important intercalation of volcanic ash rocks and agglomerates. They vary greatly in thickness, apparently attaining their greatest development between Ma Butte and the point where they cross the railway, about three miles and a half below Crows Nest lake, thinning out rapidly to the east. Their maximum thickness is probably not more than 1,500 feet.

These rocks were found of great value as forming a reference horizon for working out the faulting and folding of the region. They vary greatly in texture and in general appearance and may prove of considerable interest when examined under the microscope.

In comparing the Middle and Lower Cretaceous rocks of this area with those of the Crows Nest coal-field, a general similarity is at once seen, with, however, a very marked diminution in thickness in the rocks of this district. This is particularly noticeable in the case of the lower dark shales underlying the coal measures, which here represent the 'Fernie shales' of the Crows Nest field.

No attempt has been made to obtain a complete section of the rocks of the third division. Owing to their soft, readily-weathering nature, exposures are less frequent than in the lower beds, and especially to the east of the Livingstone range, they have been tremendously crumpled and contorted so that a great amount of detailed work will be required to obtain even an approximate section of them.

Middle Cretaceous.

Immediately above the volcanics occurs a considerable thickness of gray and black shales, in places rusty-weathering, with at least two narrow beds of hard silicious sandstone. These are followed by an unknown, but probably great, thickness of soft light-coloured sandstones, varying in texture but generally rather coarse-grained. Towards the top these are interbedded with black and gray shales and at least two seams of coal.

General section along railway.

The geological structure of this area is somewhat complex, much faulting and folding being in evidence. Following the line of railway

across the map-sheet from west to east the section shown would be approximately as follows: About one mile west from the east end of Crows Nest lake the junction of the Devono-Carboniferous limestone, which forms the back bone of the main range of the Rockies, with the Upper Cretaceous beds, is met with. This contact is evidently a faulted one, the limestone dipping about 30° west while the Cretaceous sandstones and shales have irregular westerly dips at high angles. About two miles east of this point the dip flattens until the strata are nearly horizontal, but continuing in an easterly direction, westerly dips are again met with, gradually increasing to a maximum of about 30°. At a point about three miles and a half east of the lake the volcanics are crossed. These are underlain by sandstones and sandy shales to a point a short way west of the mouth of McGillivray creek, where the conglomerate and underlying coal measures are seen dipping west 30°. From the contact with the limestone to this point the series is evidently a regularly descending one. Near the mouth of McGillivray creek, however, an extensive fault occurs with eastern downthrow, since from here easterly to a point about half a mile west of Blairmore station the above series is repeated, the coal measures outcropping at this point, dipping about 60° to the west. Only one seam, the upper, has been discovered here, the lower seams apparently having been cut off by another fault with similar easterly downthrow. The beds overlying the coal measures follow with westerly dips to a point just east of Blairmore station where the coal measures are again met with. From the base of the coal measures to the contact with the Devono-Carboniferous limestone of Bluff and Turtle mountains the surface is covered, but is probably underlain by the lower dark shales seen elsewhere underlying the coal seams.

Bluff and Turtle mountains.

Bluff and Turtle mountains lie along the axis of what is probably a compressed anticline slightly overturned to the east, the Cretaceous rocks having been eroded away, leaving the underlying Devono-Carboniferous limestone exposed to within a short distance of Frank station, when the coal measures are again encountered dipping west at about 85°. Here, however, the thickness of strata between the conglomerate overlying the coal and the limestone is very much less than that seen elsewhere between the same beds, giving the impression that a fault exists at the contact of the limestone and the Cretaceous rocks.

Frank to Byron creek.

From Frank eastward to near the mouth of Byron creek a rather wide flat syncline is crossed, the coal reappearing on the axis of a sharp anticline at this point. This is followed by another similar syncline and anticline, the coal, as before, just coming to the surface on the axis of the anticline. Still another syncline follows, the coal

measures outcropping at the old Livingstone mine. A few hundred feet to the east of this old working a fault must occur with the usual easterly downthrow, the light-coloured soft sandstones of the upper beds appearing again. From this point to the eastern limit of the sheet these rocks continue, but are so much folded and crumpled that no attempt will be made to describe their attitude in detail. It may be mentioned, however, that coal seams were noted at two or three points, and are probably the same seams repeated by folding several times.

Section across northern portion.

A section across the northern part of the map-sheet will show a considerable diversity from the above, though in general the main features are alike. Thus, between the main range and the Livingstone range a series of faults occur with uniform easterly downthrow and some large folds, usually more or less overturned to the east, resulting in almost invariable westerly dips. East of the Livingstone range a narrow strip of Lower Cretaceous rocks with some coal is found, followed by the Upper Cretaceous and Laramie rocks much disturbed; both the contact of the Dovono-Carboniferous limestone of the Livingstone range and the Lower Cretaceous to the east, and that between the Lower and Upper Cretaceous being faulted.

Two sections across the coal-bearing rocks were measured, one at least, that at Cat mountain, being fairly complete, although it is possible that other seams may occur below the last one noted.

Section at Cat mountain.

Cat mountain is situated on the west flank of the Livingstone range, about one mile south-east of the junction of Racehorse and Daisy creeks. The results obtained are as follows, given in descending order:

	Feet.	Inches.
1. Hard cherty conglomerate	9	6
2. Shaly sandstone	9	3
3. Black shale	4	0
4. *Coal* (impure)	8	6
5. Black and gray shale	24	0
6. Hard light sandstone	27	9
7. Gray and black shale	4	0
8. *Coal*	4	0
9. Sandstone	13	0
10. Gray shale	2	0
11. *Coal*	3	6
12. Gray shale	13	6
13. Sandstone	4	6
14. Black shale	1	0

	Feet.	Inches.
15. *Coal*	3	6
16. Gray and black shale	24	0
17. *Coal*	8	9
18. Gray shale	1	0
19. *Coal*	10	0
20. Gray shale	2	6
21. *Coal*	2	6
22. Hard, light sandstone	65	0
23. Gray shale	8	9
24. *Coal*	5	9
25. Hard, light sandstone	52	0
26. Black shale	9	6
27. Sandstone	1	6
28. Gray shale	12	3
29. Sandstone	10	0
30. Gray shale	11	6
31. *Coal*	5	6
32. Sandstone with a little shale	44	6
33. *Coal*	15	3
34. Gray shale	9	0
35. *Coal*	6	9
36. Gray shale	3	9
37. Hard, light gray sandstone	41	0
38. Black and carbonaceous shale and some coal	8	0
39. Sandstone	1	6
40. Black and carbonaceous shale and some coal	14	0
41. Sandstone	2	0
42. Gray shale	8	0
43. Sandstone	2	0
44. Gray shale and ironstone bands	11	0
45. *Coal* (impure)	4	0
46. Gray shale	23	0
47. Sandstone	2	0
48. *Coal*	5	6
49. Gray shale	5	0
50. *Coal*	6	3
51. Shale	0	6
52. *Coal*	9	9
53. Shale	1	0
54. *Coal* (impure)	3	3
55. Gray shale	7	0

	Feet.	Inches.
56. *Coal*	8	0
57. Shale	0	6
58. *Coal*	4	0
59. Shale	0	4
60. *Coal*	1	9
61. Shale	0	6
62. *Coal*	7	6
63. Gray shale	21	8
64. Sandstone	1	0
65. Gray and black shale	2	9
66. Black and carbonaceous shale and some coal	4	0
67. Gray shale	15	0
68. Yellow-weathering sandstone	1	3
69. Gray shale	10	0
70. Hard grey sandstone	16	0
71. *Coal*	1	3
72. Gray shale	5	0
73. Sandstone	45	0
74. Black and gray shale	..	..
Total	742	0
Total *coal*	125	3

Byron creek section.

The second or Byron creek section is probably not complete, the lower seams being wanting. Owing to the thick drift covering and the lateness of the season, it was found impossible to strip the surface any farther down. The section given below was measured on the east side of Byron creek near its head. As in the first section, the order is descending :—

	Feet.	Inches.
1. Hard light-coloured sandstone; light conglomerate in places	44	0
2. Gray and black shales, shaly sandstone and a little coal	26	3
3. Covered	11	6
4. Hard grey sandstone	2	9
5. Black shale	1	6
6. *Coal* (rather impure)	9	9
7. Black and gray shale and covered	33	0
8. Hard light-coloured sandstone	16	0
9. Black and gray shale	8	0
10. *Coal*	5	6

	Feet.	Inches.
11. Gray shale and shaly sandstone and covered	60	0
12. *Coal*	8	0
13. Gray shale	1	9
14. *Coal*	9	0
15. Gray shale	14	0
16. Gray shale and covered	36	0
17. Gray shale	5	0
18. *Coal*	8	6
19. Gray shale	1	0
20. *Coal*	12	0
21. Gray and black shale and shaly sandstone	5	9
22. *Coal*	8	6
23. Gray and carbonaceous shale	1	6
24. *Coal*	3	3
25. Gray shale	0	6
26. *Coal* (partly shaly)	10	0
27. Gray shale and covered	29	6
28. *Coal*	16	0
29. Hard light gray sandstone	41	0
30. Covered	36	0
31. Sandstone	3	0
32. *Coal*	11	3
33. Sandstone	..	..
Total	479	9
Total *coal*	101	9

It will be noticed that very little resemblance exists between these two sections. Taking into consideration, however, the fact that the two points are nearly twenty-three miles apart, much uniformity was not to be expected. Owing to the kindness of Mr. H. T. Collett, the following partial section measured by him was obtained. These measurements were made on McGillivray ridge and are of special interest in connection with the two previous sections as showing the persistency of the coal seams throughout a large area. Mr. Collett's section is as follows, in descending order:—

Section on McGillivray ridge.

	Feet.	Inches.
1. Conglomerate	20	0
2. *Coal*	2	6
3. Sandstone and shale	20	0
4. *Coal*	5	0
5. Shale	10	0
6. *Coal*	5	0

	Feet.	Inches.
7. Sandstone	48	0
8. *Coal*	25	0
9. Shale	2	0
10. *Coal*	13	0
11. Shale	..	..
Total	150	6
Total *coal*	50	6

No analyses have as yet been made of the samples of coal collected this year, and it is probable that the quality will be found to vary considerably in the coal from the various seams as well as in the coal from the same seams in different parts of the field. Generally speaking, however, the coal throughout the district is apparently of good quality, resembling very much in appearance that from the Crows Nest coal-fields. The following partial analyses of coal from the Gold creek collieries, kindly furnished by Mr. R. Green, may prove of interest :— Analyses of coals.

Moisture.	Volatile Combustible Matter.	Ash.
1. Not over one per cent	24	8
2. "	23	8
3. "	24	8·5
4. "	24	7·6
5. "	24	8·5

It will be seen from the above that this is a very fair bituminous coal. The following analyses by Dr. Hoffmann of this department are from specimens collected by Dr. Dawson in previous years :—

Locality.	Hydroscopic Water.	Volatile Combustible Matter.	Fixed Carbon.	Ash.
1. North-west branch Old Man river, 8 ft. seam	1·24	24·62	66·61	7·53
2. Old Man river, two miles below 'Gap,' 5 ft. seam	1·75	19·99	58·40	19·86
3. Crows Nest river, two miles below falls (upper seam 3 ft.).	3·27	32·53	44·38	19·82
4. Crows Nest river, two miles below falls (lower seam 3 ft.)	2·36	40·66	47·78	9·20

(*See* Report of Progress, 1882-84, pages 33, 34 and 35M and Annual Report, 1885, age 9M).

Of the above analyses the first two are from coals of Lower Cretaceous age, while the latter two are from Laramie or Upper Cretaceous coals.

Canadian-American Coal and Coke Company.

The most highly developed property in this district is that of the Canadian-American Coal and Coke Company. This company is operating a mine near Frank on the east flank of Turtle mountain. The seam is the upper one of the series and varies from nine to twelve feet in thickness, dipping to the west at about 83°, the strata being here slightly overturned. At the time of my visit a main entry had been driven in on the seam a distance of 4,500 feet, in addition to which there are two other drifts, one above and the other below. This company has been producing coal for over a year and during the past summer their output has been about 500 tons a day; it is expected, however, that this output will be largely increased within a short time.

This coal is of excellent quality for steaming purposes and is largely used by the Canadian Pacific Railway Co. on their locomotives, though it is reported to be rather high in ash.

A block of six coke ovens was built but is not now in operation.

Gold creek collieries.

The Gold creek collieries, operated by the United Gold Fields of British Columbia, are situated on Gold creek about 3½ miles above the town of Frank. A spur line of railway has just been built from the Crows Nest branch of the Canadian Pacific Railway to the mines. At the time of my visit no shipments had been made, the railway not then being completed, but development work was in progress, a main cross-cut tunnel having been driven a distance of 394 feet and a tipple being under construction. The following section of the main tunnel from the conglomerate to the end was kindly furnished by Mr. Caudron of the company :—

Section.

	Feet.	Inches.
1. Conglomerate	1	1
2. Sandstone	3	2
3. Conglomerate	6	5
4. Sandstone	21	8
5. Shale	2	0
6. *Coal*	0	6
7. Shale	0	3
8. *Coal*	1	5
9. Shale with a little coal	2	11
10. Sandstone	2	9

	Feet.	Inches.
11. Shale	0	4
12. Thin-bedded sandstone	12	2
13. Gray shale	5	7
14. *Coal*	2	0
15. Shale	0	8
16. Sandstone	8	6
17. Shale	6	3
18. *Coal*	0	1
19. Shale	1	0
20. Sandstone	4	3
21. Shale	5	5
22. *Coal*	3	3
23. Shale	0	3
24. *Coal*	4	7
Total	96	6

Besides this the company are opening up several seams on both sides of the valley, about one mile and a-half above the main entry.

The valley of Gold creek here occupies the centre of a rather sharp syncline, the coal measures outcropping on either side, so that it is possible, by means of short cross-cut tunnels to attack the coal on both sides of the creek.

In this part of the district the coal measures appear to have suffered a considerable diminution in thickness, as will be seen by comparing the section above with those of Cat mountain and Byron creek. The coal, however, appears to be of excellent quality and the seams of good workable size.

Grassy mountain.

This company has also done a large amount of prospecting on Grassy mountain, which lies directly north of Bluff mountain and forms the axis of the northern extension of the Turtle-Bluff mountain anticline A great number of coal seams have been uncovered at this point, but, in all probability, in many cases these are the same seams repeated several times by sharp folding.

This company expects to construct a number of coke ovens during the coming year.

York creek.

Outside of the workings of these two companies, the work done has been largely of a prospecting nature. Among others the Newport-Paulson property, situated on York creek about two miles above its mouth, on the most westerly outcrop of the coal measures, may be

mentioned. Three seams of 17½, 12 and 8 feet thickness respectively have been opened up by short tunnels showing good coal in each case; the strata here dip about 35° to 40° west.

Lyon creek. Considerable work has been done by the Hastings Exploration Co. on Lyon creek, several large seams having been opened up. The tunnels, however, have caved in so that it was impossible to obtain a section here. These openings are on the same outcrop as are those on the Newport-Paulson property.

Blairmore. About half a mile north of the town of Blairmore Messrs. Proctor and Fishburn have driven a cross-cut tunnel cutting two seams, besides having done a good deal of surface stripping.

A wagon road was built last summer up Byron creek and a number of seams were uncovered near the head of the creek: the Byron creek section on another page will show the result obtained here.

Byron creek. On the McVittie-Leitch property, near the mouth of Byron creek, a number of seams have been uncovered by open cuts. The coal apparently outcrops here on the crest of a sharp anticline and it is probable that some of the seams are repeated.

Upper Cretaceous coals. The coals and lignites of the Upper Cretaceous and Laramie have been opened up in several places, chiefly to supply the local demand for domestic fuel. In most cases however, the highly contorted condition of the strata renders mining difficult and uncertain. The most important of these openings is on the Galbraith property, about two miles below the falls on the Crows Nest river, where small shipments are being made more or less regularly. A short distance below this, on the Holway property, a shaft has been sunk on what is probably one of the same seams. This is now abandoned. Several other openings were seen, two on the Old Man river and one at Livingstone, in all of these the work done has been on a very small scale, shipments having been made intermittently for local use.

As it is now proved without a doubt that very large deposits of coal exist in this area, and success in future mining operations will depend largely on the selection of the best available sites. In this connection several factors have to be taken into consideration, such as the quality of the coal, transportation facilities, the absence of faulting, and the altitude of the coal seams themselves; with regard to the latter, it is the general opinion among local mining men that, for the present at least, the coal below the level of the valleys cannot be profitably extracted in competition with that won by drifting into the mountain sides and requiring no hoisting or pumping machinery.

Limekilns.

The limestone of Bluff and Turtle mountains is now being utilized to a certain extent, several limekilns being in operation on both sides of the railway in the Crows Nest Gap. This rock is said to make a very good lime for building purposes.

Sulphur springs.

Several sulphur springs were noted as occurring along the eastern flank of the Livingstone range near the contact of the limestone and the Cretaceous rocks. The most important of these is situated about one mile west of Frank, just south of the railway, where a sanatorium hotel has been erected.

Topographic work.

In addition to the geological work done during the season, a topographical survey was carried on by means of transit triangulation, panoramic sketches, and traverse of wagon roads, trails, etc. Enough information was obtained to compile a contoured map of the greater part of the area.

Fossils.

A number of fossils were collected, chiefly from the Upper Cretaceous and Laramie beds, with a few from the lower dark shales and some fossil plants from the coal measures. None of these have as yet been determined.

Bull river iron deposits.

During the past year a great deal of interest has been taken in the possible future development of iron industries both in this district and in British Columbia. In view of this, a flying trip was made to the Bull river iron deposits situated on the south-east side of Bull river, about ten miles north of Jaffray station on the Crows Nest branch, and at an elevation of about 3,000 feet above the valley.

The base of the mountain consists of Cambrian quartzites and altered argillites dipping at low angles to the east. Towards the top these are succeeded by dolomites, interbedded with highly altered argillites, apparently conformable with the lower beds and probably also of Cambrian age. In a number of these upper beds the original constituents have been replaced in varying degrees by hematite ore. The work done consists entirely of surface stripping and open cuts, more or less disconnected, so that until further work is done it is impossible to form an opinion as to the continuity of the ore in the several beds, nor was the source of the ore made clear, though it is certain that mineralization has taken place over a considerable area. The ore appears to be of good quality, though in places, somewhat silicious. The maximum thickness of clear ore seen was about five feet.

Eastern Assiniboia and Southern Manitoba.

Mr. D. B. Dowling.

Lignite of Souris river and Turtle mountain.

The treeless areas of Assiniboia and Manitoba are fast filling up with settlers and, as the fuel supply is an important item in the well-being and permanency of settlement, an inquiry into the conditions and extent of the coal mining industry in these districts was thought advisable. The mining of lignite in the Souris valley is well established, but no examination, of this district has been made since 1880, when Dr. Selwyn superintended the putting down of several bore-holes to test the eastern limit of the deposit. In Manitoba coal seams had been found on the flank of the Turtle mountain, and mention of these was made in the Summary Report of this Department for 1890–91, but these were isolated instances and an endeavour to correlate the seams and outline their possible outcrop seemed of present importance.

Beside the examination of the coal-field of the Souris and Turtle mountain, inquiries were made relative to some other industries in Manitoba, such as the making of brick, cement and plaster. The report which follows contains a summary of the field operations for the season with some general notes on the extent and topography of the Turtle mountain coal field, illustrated by a contoured plan of the northern flank of this hill.

In pursuance of instructions I proceeded westward, arriving in Winnipeg June 7. Here I was joined by Mr. Fred. Bell who was to be my assistant for the season. At Brandon we obtained a team and light wagon, intending to drive through the district southward to the Turtle mountain and observe any outcrops of the rocks which are beneath the Laramie or Lignite Tertiary which forms the summit of this elevation. Owing to the wet state of the roads, after visiting some exposures in the vicinity of Souris, I determined to ship the outfit to Estevan where I learned the roads were in better condition. In this way I could make the examination of the Souris coal-field at first and later during the summer that in Manitoba to better advantage.

Explorations near Estevan.

On our arrival in Estevan we had evidence of the influx of land seekers in the crowded state of the hotels and the activity of the land agents and those in the livery business. We established our camp in the valley below the town and spent two weeks in exploring the banks of the stream between Estevan and Roche Percée. While there the stream rose in flood and prevented our driving across, so that much of our work on the south side was performed on foot.

With the railway levels as a base, elevations were obtained with aneroid barometers and a series of levels (with an 18-inch spirit level) were made across the valley at the coal mines below Roche Percée. These were connected with the railway levels at the latter station and also carried east as far as the site of the bore-hole of 1880, located on the south-east quarter of Section 6, Tp. 2, Range 5 west of the Second Meridian. Topographic work.

From heights thus obtained a contoured plan of the area examined was roughly prepared showing intervals of ten feet, and from this a model has since been constructed for the purpose of illustration.

The coal horizons were traced in almost continuous lines from Estevan eastward for 14 miles and along the valleys of the Souris and Short creek to the International boundary.

After having completed the mapping of the field and the measurement of all the natural sections, we drove eastward by the trail near the railway to the Turtle mountain, where, on August 4, I began running a series of instrumental levellings to determine the elevation of all the known occurrences of lignite and thus obtain some basis from which to correlate the seams and find the probable slope of the horizon. In this endeavour we levelled over 52 miles of roads, and by driving from these known points were able to determine by barometer in a satisfactory way the contour of a wide belt around the north flank of the hills. As natural exposures in this country are rare, much of our information was obtained from those residents who had in sinking wells touched or passed through seams of lignite. In the mountain itself very little information could be gained except in isolated cases, owing to the lack of settlement and scarcity of roads. A more detailed account of the information thus gained, illustrated by a contoured plan of the lower slope of the hill, is appended. North flank of Turtle mountain.

On September 8, I disbanded the party at Boissevain and sold our horses and wagon, intending to visit such other localities as could be reached by train.

A mantle of sand and gravel is found in varying thickness over the area formerly occupied by the extinct Lake Souris. This lake was called into existence at the close of the glacial period when the edge of the ice sheet had melted back to the latitude of the Tiger hills and in the hollow in its front had accumulated water from the melting ice. As the natural outlet was thus closed by the ice an overflow to the south-east resulted, and as the fall down the face of the Pembina mountain was very steep, the erosion was rapid and a deep channel Superficial deposits in southern Manitoba.

was soon scoured out which now forms the valley in which a small stream, the Pembina river, flows. No distinct traces of shore lines are noticeable along the face of the Turtle mountain, but terraces and irregular hills of gravel and sand are found which were probably shallow water deposits. Ridges of this nature were noticed north of Whitewater lake, indicating a rise which approximates in elevation the gravel and sand terraces of the lower flank of the mountain occurring at about the 1,700 feet level. In the road cutting south of Boissevain, gravel and sand deposits are found resting on boulder clay near the top of an isolated hill.

Eastward along the railway the Cretaceous shales begin to appear in the beds of creeks crossed. At first, the shale exposed seems not to be in place but washed from the boulder clay, as, at the creek crossing between Ninga and Killarney, they were searched for but, although the cutting shows plenty of the gray shale, it is on the surface and has been washed out. The first definite exposure is at Crystal City, where there is a very thin coating of till.

Exposures from Boissevain to Lariviére.

The following notes regarding exposures seen from the train are here added. From Boissevain to Ninga the railway runs in sight of the foot of the slope of the hills to the south, which consist principally of a broken terrace at about a mile south of the track. Just above Ninga there is a gravel pit. About two miles east of the latter station there are some hills north of the track which have the appearance of being dumps of gravel. At Killarney there is a series of ridges which appear to be of gravel. They run parallel to the sides of the narrow lake, one on each side, though the southern one seems to be on the south side of the White Mud river. The railway cutting at Holmfield shows boulder clay covered, at a mile east of the station, by gravel. At the river at Cartwright there are no exposures but the cutting shows gravel and a little shale, and a mile east of the river sand is exposed in a ballast pit. All over the strip between this and Clearwater there are many ridges which are bare of stones. These are possibly gravel or elevations left from the denudation of the underlying shales. At Mather the gravel deposits must be thin, as boulders show thickly on the surface and in the slough near the town. At Clearwater there are several exposures of shale in the river bed, but it is not seen in the railway cuttings and, as mentioned above, the first appearance near the surface is at Crystal City. All along the grade descending into the Pembina valley, good exposures of the shales of the upper part of Pembina mountain series as described by Dr. G. M. Dawson, are seen wherever excavations have been made for the railway. This shows the absence in the valley of any thickness of boulder clay and

Pembina valley.

is a proof that the removal of the rocks in forming the valley was after the deposition of the boulder clay.

The lower division of the shales of the Cretaceous is not so homogenous in composition, as it includes clay ironstone, rusty clay shales, and soft black clay shales, in which there are many fragments of fish remains and some carbonaceous matter. These beds outcrop lower down the valley and at the locality visited, on section 14, township 2, they formed nearly the whole of a small cliff on the western bank of the river.

The calcareous clays of the Niobrara division should be exposed in the lower part of this valley, but I was not able to obtain definite information as to the location of any exposures. Where the Canadian Northern Railway mounts the Pembina escarpment at Arnold, light yellowish calcareous clays probably of this horizon are exposed in a small ravine. Beneath are gray calcareous clays in which inoceramus and oyster shells, as well as a variety of fish remains, are common. These species are supposed to be characteristic of the Niobrara.

The Union Mining Co.'s plaster mill on Lake Manitoba at Gypsumville and the quarries situated ten miles to the northeast were visited by means of the company's steamer from Westbourne. A short visit was also made to the quarries at Stonewall, at the request of Dr. Whiteaves, to add if possible to our list of fossils from that locality. Several forms were obtained, among which appears a new species of coiled cephalopod. I desire to acknowledge the efficient aid I received from Mr. F. C. Bell in the instrumental work accomplished during the season.

I returned to Ottawa September 29.

CEMENT.

Cement in Manitoba.

Mention has been made of the occurrence of rocks in the Pembina escarpment which are referred to the Niobrara. These are chiefly calcareous clays, as distinguished from the clays both above and below them in which there is hardly a trace of lime. The exposure at Arnold by comparison with the railway levels, is situated between 1,200 and 1,275 feet above tide and is continued northward on the Boyne river or its extension in the township to the north-west. On section 15, township 6, range 8, marlite and calcareous clays are found between 1,220 and 1,320 feet above tide near the extension of a new line from Carmen to Somerset. Below them on section 13 of the same township between 1,120 and 1,220 feet, clays without lime are found.

Niobrara shales.

On the banks of the Assiniboine river directly north of Treherne, Mr. Tyrrell recognized the Niobrara at what is supposed to be a much lower horizon, as also the calcareous clays penetrated in the well boring at Morden. This may indicate a thickening of the formation and the introduction of a band of dark clay between the members of the upper part and the lower.

Cement works at Arnold.

These deposits are of importance in a commercial sense as they contain nearly all the ingredients required for the composition of cement. At Arnold, the Manitoba Union Mining Co. have established a small plant for the manufacture of cement. Their kiln and grinding house are situated in the ravine and are at present making a common grade of cement from the lower gray beds which are mined by a tunnel. The experiments made by this firm point to the lack of a pure lime in the rock now used. In other localities the upper part of this formation has proven very rich in lime, and beds approximating the correct percentage will no doubt be found above those now used. Experimental briquettes with an added percentage of imported lime were tested at the time of my visit and went as high as 500 lbs. per square inch after three months in water. This would seem to approach the strength of average Portland cement.

Cement rocks.

The section of the rocks exposed here shows fifty feet of light-coloured clays, generally light yellow and brown near the upper part of the hill and gray or bluish-gray at the bottom of the exposure. Dark streaks in the upper yellow part suggest carbonaceous matter, but many of them are found to be of a dark, almost black, clay without lime. The average sample of the yellow beds compared with the bluish-gray of those in the mine, show, according to the subjoined note, a percentage of lime which seems very constant and the assumption is that this thickness of 50 feet exposed in the hill-side might with advantage be all used without the expense which mining one bed imposes. The beds in the mine appear very uniform in texture, but the burnt specimens show in a marked manner that the beds are made up of thin plates differing in composition. The suggestion then that the whole mass be puddled seems reasonable, and to the uniform mixture then could be added such other elements as may be needed. The burning would also be more uniform if the material were pressed into bricks of a common form instead of a varied assortment of fragments large and small as at first attempted.

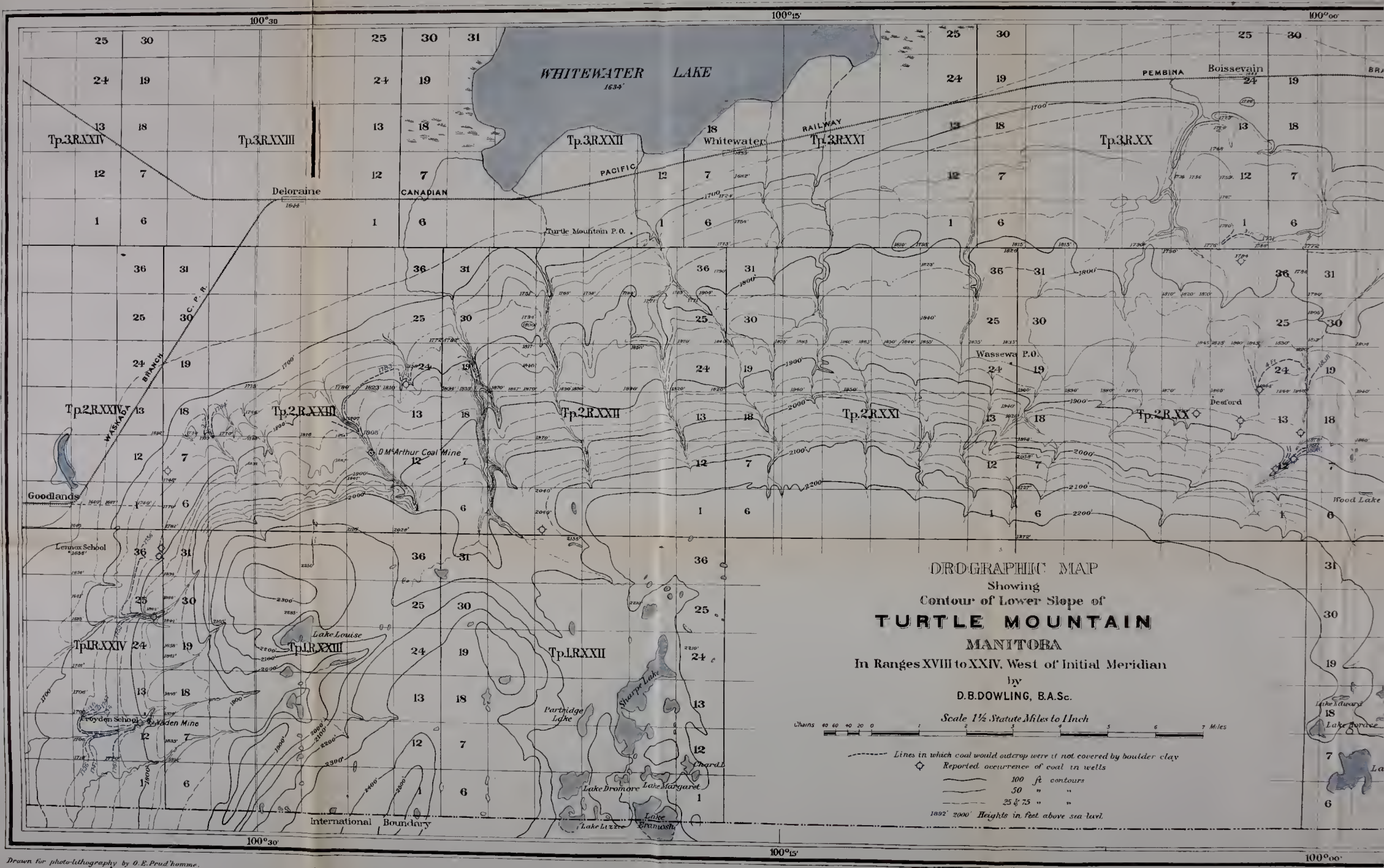
From the laboratory of the Survey, contributed by Dr. G. C. Hoffmann :—

'Memo. *re* results of examination of two specimens of shale from Arnold, Man., collected by D. B. Dowling, 1902.

Geological Survey of Canada

ROBERT BELL, Sc. D (Cantab) LL.D, M.D., F.R.S., ACTING DIRECTOR

1903.



DROGRAPHIC MAP

Showing

Contour of Lower Slope of

TURTLE MOUNTAIN

MANITOBA

In Ranges XVIII to XXIV, West of Initial Meridian

by

D.B.DOWLING, B.A.Sc.

Scale 1½ Statute Miles to 1 Inch

Chains 40 60 40 20 0 1 2 3 4 5 6 7 Miles

Lines in which coal would outcrop were it not covered by boulder clay

Reported occurrence of coal in wells

100 ft contours

50 " "

25 & 75 " "

1892' 2000' Heights in feet above sea level

Drawn for photo-lithography by O. E. Prud'homme.

Geological Survey of Canada

ROBERT BELL, Sc. D. (Camb.) LL.D, M.D, F.R.S. ACTING DIRECTOR

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1892' 2000' Heights in feet above sea level

To accompany Part A Vol XV

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(a.) A dark bluish-gray shale, was found to contain:—Lime, 32·07 per cent, equivalent to carbonate of lime 57·27.

(b.) A brownish-yellow shale was found to contain :—Lime, 31·51 per cent, equivalent to carbonate of lime 56·27.

BRICK.

Brick.

The clay generally spread over the surface beneath the soil has been utilized in many places to make a rough brick for domestic use. A finer grade both as to colour and finish is required and generally imported for the more pretentious buildings in the larger towns and cities. An effort to utilize the shales of the Pierre formation which are exposed in the higher part of the province is being made in the Pembina valley where a great thickness of the upper part of the formation is exposed in the sides of the valley.

Shales of Pembina valley.

The shales of this upper part are of a light gray colour, in heavy beds which readily split up into thin sheets. No traces of fossils were observed and the rock seems to be wholly argillaceous with no calcite. At Lariviere, the station in the valley, a brick-making industry has been started. The shale is pulverized as it comes from the quarry and compressed in the dry form. These bricks are at once built into the kiln for burning. The plant with a complement of 17 men is capable of producing 30,000 bricks per day. This method of making brick from shale is in active operation in Pennsylvania and other states and it is expected that with some modification it will be a success here. The fuel used is a mixture of wood and lignite.

Shale from Souris.

The shale of the Pierre formation is exposed in many localities both in Manitoba and the Territories. A sample of this from Souris, Manitoba, was tested in the Laboratory of the Survey and experimental bricks made which prove the fitness of the material. Dr. Hoffmann gives it as his opinion that they would make a good class of fire brick. The tests to which the material was subject are here given from the Report of Progress for the years 1880-82, p. 2 H ;—

Tests for brick making.

'For the purpose of brick-making this material requires, agreeably with the present experience no admixture whatever. In the following experiments it was simply ground to powder—which it readily admits of—mixed into a stiff paste with water, well pugged and then the moulding of the bricks proceeded with. By employing the material in a fine state of division, and forming the bricks under pressure, an article of very close texture may be ensured. The bricks after having been thoroughly dried, were finally burned in the muffle

of a cupelling furnace, at a full red heat. On examination they were found to have retained their form well, having neither warped nor cracked: they were firm and tough: the colour, a very pleasing one, may, perhaps, be best described as a very pale brownish-yellow. They were in no wise affected by protracted and repeated immersion in water.'

Fire brick.

'Other of these bricks were inserted in covered crucibles, and these latter placed in an air-furnace, the temperature of which was gradually raised, until, at the expiration of an hour, a white heat had been attained, at which temperature it was maintained for an additional two hours. On opening the crucible the bricks were found to have retained their original form intact, they had neither warped nor cracked, their edges remained perfectly sharp and showed no indication of having undergone even the most incipient fusion. Colour, a very pale reddish-brown.

'The foregoing experiments tend to show that this clay is well adapted for the manufacture of an excellent building brick, and further, lead to the inference, that it could also be advantageously employed for the manufacture of a good class of fire brick.'

PLASTER.

Plaster of Paris.

The gypsum deposits at the base of the Devonian, as exposed north of Lake St. Martin, are being utilized for the making of plaster. The deposits are worked in open quarries and the gypsum transported to the shore of Lake Manitoba, where it is ground and burnt—shipment to the railway at Westbourne being made by steamer. As the gypsum deposits were first examined by Mr. J. B. Tyrrell in the summer of 1888, the description published by him in the Canadian Record of Science for April, 1889, might be here reproduced, as his general report contained but a passing remark. His visit was made on foot from Lake St. Martin and after passing through a somewhat level country a rough ridge situated on sections 13 and 23, Township 32, Range 9 west of Principal Meridian, was reached and the following extracts from the above paper begin his description at this point:—'Following

Gypsum deposits east of Lake Manitoba.

the ridge, still in a north-westerly direction, for a mile, the surface becomes very rugged and irregular, being broken by deep pits with steeply sloping sides. In this rough country, gypsum may be seen in numerous outcrops, being usually soft and crumbling from the effects of weathering, but in some cases it is still quite hard. The height of the tops of the knolls in this hilly area is about thirty-five feet above the eastern level plain, or sixty feet above Lake St. Martin. The breadth of the hilly country was not de-

termined, the Indian who accompanied us stated that it extended in a south-westerly direction, as far as a certain point on our journey of that day, which was about a mile and a half distant from where we were then standing, beyond which the level country began again.

'In a north-westerly direction the ridge was followed for two miles further, to a rather conspicuous hill a short distance north of the Ninth Base Line in section 2, Township 33, Range 9 west of the Principal Meridian. In this distance it appeared to be broken through by considerable gaps in several places, but where it was well marked, it invariably showed the irregular surface so characteristic of country underlain by gypsum deposits. In many places small caves would extend in from the bottoms or sides of the pits, some of which held beautifully clear cold water.

'This country is a famous winter hunting ground for the Indians, for in the autumn the bears retire to these caves, as being confortable quarters in which to pass the time until the following spring, and many of them are killed every year. Around the mouths of several of the caves could be seen marks of the axe, where the hunter had been obliged to widen the entrance to the cave to be able to get into it to secure his prey. The thickness of the exposures of gypsum in these holes and caves was nowhere very great, ranging as a rule from three feet to six feet six inches, but in none of them was the total thickness of the deposit seen. Indian hunting ground.

'The hill at the furthest point to which the ridge was followed, rises as a rounded knob, twenty feet above its general level. This hill, like the others, appears to be composed of gypsum, as on its sides are holes extending down twenty feet below its top, in which beds of gypsum are well exposed.

'In the north-west corner of Township 32, Range 8, west of the Principal Meridian, is a rounded hill rising thirty-five feet above the plain, its greatest length being about 600 feet, and its greatest breadth 150 feet. Its surface is overgrown with small canoe-birch. Two holes, each about eight feet deep, have been dug by prospectors in this hill. One at the top shows, below a foot of decomposed material, seven feet of hard, compact, white anhydrite or 'bull plaster,' exhibiting a more or less nodular structure, and breaking on the surface into small irregular fragments. Very little bedding can be detected in the mass. The other hole is in the side of the hill fifteen feet lower down, and shows on top two and a half feet of white clay, consisting of decomposed anhydrite, below which is five feet and a half of white nodular anhydrite, similar to that in the other hole. This gives a thickness,

almost certainly, of twenty-two feet of this rock and it is not improbable that the hill is entirely composed of it.

'Again, just north of the Ninth Base Line and two miles east of the township corner, between Ranges 8 and 9, is a poplar-covered hill or ridge thirty feet high. In various places on this hill are exposures of snow-white gypsum, similar to what has been described above, showing in some cases a thickness of ten feet in one section. The most of it is massive or crypto-crystalline, and lies in regular beds which dip slightly towards the west. Some of the beds or layers however consist of beautifully crystalline clear colourless selenite, which is easily broken out in lamellar masses of considerable size. This is the mineral which, in the west, has been so often mistaken for mica.

Gypsum deposits east of Lake Manitoba.

'As far as examined the beds preserve a pretty constant character. Where they immediately underlie the surface, the country is very rough and hilly, and the prevailing poplar of the region is mixed with birch, or the spruce of the adjoining low-lying land is replaced by Banksian pine. The gypsum itself is generally very pure, of a dead white colour, and usually stratified in rather thin beds, which are either horizontal or dipping at a low angle. Among the massive beds, however, are many others, composed of crystals or crystal masses, in which the crystals usually stand transverse to the planes of bedding. Some plates could doubtless be obtained from the crystal-masses sufficiently clear for optical purposes. No anhydrite was seen mixed with the gypsum, but one of the hills, as above stated, appeared to be composed entirely of it. It is much harder and tougher than the gypsum or hydrated sulphate of lime, is considerably heavier, has a roughly nodular, rather than a distinctly stratified structure, and is of a decidedly bluish tint.'

Quarries opened.

The bedded character of the gypsum is well seen in the quarries opened by the company. The one first worked is probably on the ridge followed by Mr. Tyrrell, and is in or near section 13. In this a quarry 55 yards long has been opened and shows an average depth of ten feet. From this, judging by the cross section of the ends, there has been removed about 1,800 cubic feet of rock. Nearby another quarry not so well worked out, is about 40 yards long. Prospecting pits showing white anhydrite near the surface have not determined its depth, and, judging from the nodular and lenticular inclusions in the face of the quarry near, some of these prospecting holes may have touched some of the thin beds and do not necessarily preclude the presence of gypsum beneath. Other quarries are to be opened farther to the east and north.

The western limit to the uneven country underlain by the gypsum appears to be bounded by a small stream flowing south into the north end of Partridge-crop lake. So that a distance of ten miles intervenes between the deposit and the mill on Lake Manitoba. The rock is quarried and transported to the mill over a bush road by team. The mill is situated in a small bay just to the north of Davis point, and the material is piled in close proximity. As the shipping season is confined to the summer, enough gypsum has to be hauled to the mill during the winter to meet the estimated output for the next year. The grinding and roasting is by the usual burr stone, and kettle and the shipments during this season, according to the manager, average 70 tons per week. This will probably be increased in the future. Plaster mill. Output.

As these beds belong to a horizon just below the Devonian, as in the western Ontario peninsula and in New York state, outcrops should be looked for in the country south of this locality and east of Lake Manitoba. The ridges west of Shoal lake and Stonewall might be predicted as possibly having concealed beneath the surface covering some of the beds of this deposit. Evidence of their extension to the west in shown in the boring on Vermilion river made by the Manitoba Oil Company, where at a depth of 550 feet, gypsum with a thickness of 15 feet was struck. Probable extension of beds.

THE SOURIS COAL MINES.

The mapping of this field and a more extended report could not be accomplished in time for insertion here, but a brief note is given. Souris coal mines.

In the vicinity of Estevan there are roughly three series of seams which are for convenience referred to as Upper, Middle and Lower seams. The Upper (4 ft.) seam is found all around Estevan at various shallow depths below the surface. It has been struck in many of the wells and has been worked along the outcrop by farmers and others in many places as far east as opposite the site of the bore-hole of 1880 in range 5. The seam maintains the average thickness of 4 ft. over most of this area. Though the quality of the lignite is generally inferior to that in the lower seam, its accessibility and even thickness renders it the more useful for purely local purposes. The Middle seam which has been burnt in many of the outcrops in the vicinity of Estevan and near Roche Percée, thins out very much. A small remainder of it has been mined out in an isolated hill in the valley at Estevan, and the seam in the old Dominion mine west of the town was probably on either this or the Upper seam locally thickened to 6 feet. Seams in Souris district.

The Lower seam is separated into several smaller ones by clay partings of various thicknesses and is mined both beneath the town Lower seams.

and eastward in the vicinity of Roche Percé. The quality is much better than in the upper ones and at the eastern end of the coal-field the clay partings have thinned out and eastward from the Hazzard mine, in which there is still a trace of the parting: in the Souris and Roche Percée mines there is a clear 8 feet seam of good lignite.

Output of mines.

The mines in active operation here are under one management and the average output during the summer months amounted to about 100 tons daily. As the autumn approached this increased and for part of the time trebled the summer output.

Extension of field north and south.

The extension of the seams northward toward the Souris branch of the C. P. Ry., was this year tested by an independent company having interests in property between the river and Bienfait. Owing to difficulties in penetrating some of the ironstone bands above the Lower seam several of their bores had to be abandoned but enough was done to prove that over a large area, deep mining from the surface is feasible. Southward, the sections on Short creek and Souris river afford evidence of the continuation of workable seams to the Boundary line.

COAL IN THE DRIFT CLAY.

Coal in drift at Souris.

At Souris, Manitoba, dark shales of Cretaceous age outcrop along the banks of the river near the town. About half a mile east, at the old rifle range, a very thin streak of coal had been found some years ago near the top of the formation but subsequent borings by the Manitoba government had proved that below this there was a great thickness of barren shale. Notwithstanding this, a few of the residents still had hopes of the ultimate discovery of coal in the vicinity and a farmer had commenced the construction of a tunnel into a mass of boulder clay. This probably was induced by the finding in the drift many small fragments of coal along with pebbles derived from a distant source The man was persuaded to abandon the enterprise as the drift over a large part of the western part of Manitoba contains fragments of coal probably derived from the lowest member of the Cretaceous formation—the Dakota sandstone—which would outcrop along the foot of the Pembina and Riding mountain escarpment.

Notes to Accompany a Contoured Plan of the Lower Slope of Turtle Mountain, Manitoba.

Mr. D. B. Dowling.

Explorations of areas covered by Cretaceous and Tertiary rocks on the plains has established the general fact that very little disturbance is to be found in the eastern part as indicated by tilting or faulting, and that in a general way the series of beds remain very nearly horizontal. Where there are known outcrops of coal it would be most probable that its continuation would within certain limits be found along a line representing points of equal elevation. Coal in Turtle mountain.

In examining the outcrops along the slope of the Turtle mountain it is found that they are so meagre and few that an attempt to correlate the beds by such exposures would be hopeless. On the other hand, many of the residents have by well-boring obtained a certain amount of information relative to the underlying rocks which would, if supplemented by a knowledge of the orography of the district, be useful and might lead to some definite result in tracing seams throughout the district. Map of mountain.

The map submitted is ruled to show intervals of 25 feet difference in elevation over the lower slope and 100 feet in the higher parts.

The notes submitted represent such information as it was possible to gain in the short time at our disposal.

The general character of such coal as was seen by us is very similar to that of the lignite which is now being used from the Souris field. It may prove not so homogeneous or compact but will undoubtedly be useful for local use. It probably will not stand very long or rough shipment. Housekeepers in Deloraine who had used the coal from the McArthur mine claim that it was equal to the Souris coal. Unfortunately no analyses are to hand by which to make comparison, but it may be assumed that the lignite will contain a high percentage of water and therefore slack on drying and it will be necessary to keep it stored in a closed bin or cellar.* Character of coal.

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* Note.—An analysis of coal from the northern part of Dakota in the Turtle mountain shows the nature of a probably similar lignite. This is poorer in fixed carbon than that of the lower seams of the Souris field, but very similar to some of the upper ones.

Analysis by E. Whitfield:

Water	13·98
Volatile hydrocarbon	40·81
Fixed carbon	36·90
Ash	8·31
	100·00

—Bull. U. S. Geol. Surv. No. 27, p. 74.

The western slope of the Turtle mountain is considerably more abrupt than that to the north. From Goodlands, a station on the Waskada branch, a rise of 200 feet in three miles reaches the base of the steep slope of the mountain proper. To the south, the outline of the mountain follows a nearly north-and-south line, but as will be seen from the contours drawn on the accompanying plan, the lower slope is carried out more to the west and in places along the western edge of Township I, Range 23, a narrow terrace is developed. It is beneath this terrace that the first coal seams found in the district are situated. Several streams that have their origin not far to the east of this terrace or come from a bay in the outline of the mountain, cut deep ravines where they issue from the edge of the terrace. A well dug in the bed of one of these ravines on Section 12, Township 1 Range 24, passed through several coal seams from which a running stream of water was obtained. This apparently, proved too wet to work, and another pit was sunk from higher ground about 150 yards to the north. From this, coal was raised by means of a farm engine and drawn to Deloraine in the winter by teams. This pit is known, locally as the Vaden mine and some notes on it were published by Dr. Selwyn in the Summary Report for 1890. In digging the well in the ravine, after passing through the surface deposits, a mass of broken coal five feet thick was passed through, but in the shaft for the mine this was not recorded, so that probably it was an accumulation of drift material derived from a small seam just above.

Section at Vaden mine.

Tp. 1, R. 24.

The section as obtained by Dr. Selwyn shortly after the well was dug is given below, with the elevation of the base of each member as deduced from levellings taken this season.

	Feet.	Inches.	Feet.	Inches.
Surface of ground	0	0	1773	6
Surface deposit	3	0	1770	6
Dark clay	4	0	1766	6
Coal	5	6	1761	0
Clay shale	10	0	1751	0
Coal	3	6	1747	6
Sandy brown shale	6	0	1741	6
Soft whitish brown shale	2	0	1739	6
Sandy clay	6	0	1733	6
Coal	1	6	1732	0
Friable whitish brown sand	12	0	1720	0
Bored from bottom of shaft sandstone	20	0	1700	0

Of the pit at the old mine Dr. Selwyn writes:* 'The coal was struck at 40 feet, 4 feet 6 inches thick, then 12 feet of sandy shale and thin bands of iron ore; coal 1 foot 6 inches; then bored 35 feet through sandy shale; total 78 feet 6 inches.'

* Summary Report, Geol. Surv. Can., 1890, p. 11A.

The elevation of the ground at the mouth of the pit is 1,794 feet above the sea. How near this is to the original surface is hard to determine, but from the above section it would seem that at about 1,754 feet a seam of coal 4 feet 6 inches was struck, so that the bottom of this would be at 1,749 feet 6 inches as compared with 1,747 feet 6 inches of the section in the flowing well. The bottom of the lower coal seam, 1 foot 7 inches thick, would be at 1,736 feet as compared with that in the well at 1,732 feet. These variations are due to the uneven thicknesses of the sandy clays and sandstones which intervene. The boring carried from the bottom of the shaft was probably down to the same bed as in the well or near to the 1,700 foot level*. The following elevations were determined in this vicinity: Top of bank on road north-east of mine, 1,842 feet 5 inches; on road bridge near mine, 1,784 feet 7 inches; on same road below Croyden school, 1,809 feet 7 inches; at flowing well near mine, 1,773 feet 9 inches; in bed of stream west about 50 yards in the north-west quarter of this section, 1,753 feet 5 inches. A flowing well at the last of the above points was dug into some coal in the bed of the creek not more than two feet below the surface, and on the north bank a caved-in pit was reported to have been sunk for coal. Further inquiry elicited the fact that the first coal taken out in the district came from this pit. Mr. Herman Mentz, who lives on the south-east quarter of Sec. 22, Tp. 1, R. 24, had, before the Vaden mine was opened, taken ten tons of coal from this pit at a depth of ten feet, or about two feet below the bed of the stream. The seam was four feet thick and, Mr. Mentz thought, tilted slightly to the north. If the bed was two feet below the bottom of the creek the elevation would be 1,751 feet, and it is probably the same seam as that in the mine between 1,751 and 1,747 feet.

First opening made on coal in sec. 12.

Below this the stream falls at about the same rate for a short distance and then the grade is not so steep, as where it crosses the road between sections 10 and 11 the creek bed is at 1,706 feet.

On the stream which traverses the south-east corner of Section 12 no exposures were seen, but from the elevations, the four-foot seam might be expected near the centre of Section 2. The ground behind Mr. Proudfoot's house is at 1,758 feet.

Northward the next exposures of coal of this horizon are on section 25, where a deep ravine cuts through the edge of the terrace at a point where it is at about its highest. At Mr. Powne's house on the edge of the ravine a well was bored for 127 feet and passed through coal or

Sec. 25.

*Several holes are noted by Dr. Selwyn just north of the Vaden mine and in one not far distant a seam of 7 feet was struck at 30 feet from the surface.

coaly matter at about 102 feet. The curb of the well is at 1,853 feet and this brings the horizon of the coal at about 1,751 feet. To test this, Mr. Sherman, of Deloraine, put down a pit in the bottom of the ravine at or near the point where it forks. The elevation of the spot selected is 1,760 feet and the coal was struck at 8 feet, equivalent to 1,752 feet. Little information could be obtained as to the thickness found, but it may probably be assumed to be the same seam as at this elevation at the Vaden mine. A bore-hole was also put down, but the depth is unknown. The bed of the ravine slopes rapidly to the west and at the centre of the Section, or in a distance of about a quarter of a mile from the forks, the fall is 15 feet—enough to bring the bed of the stream below the coal seam, and it is very likely that a tunnel at this point into the bank would strike whatever coal there is. The section in the well shows a depth of about 25 feet of sand and sandstone above the coal with clay and sand higher up. A well north of the stable and upon the north slope, was bored from an elevation of 1,825 feet down to 1,760 in the sandstone, where water was obtained but without reaching the coal seam.

Sec. 36. Following this terrace northward to Section 36, a well at Mr. Morningstar's in a slight ravine in front of the house, passed though a small seam of coal and ended at a depth of 17 feet in another. The elevation at the well curb is 1,774 feet and at the coal about 1,756, or slightly higher than those determined south of this. A well subsequently bored from the top of the bank showed the thickness of the seam to be only 22 inches. The same seam was also struck by Mr. Poole, who lives on the north-east quarter of the same Section, in a well near his house. These borings seem to indicate that the coal of this horizon thins out considerably in going north, but this may be only a local feature.

Sec. 26. A lower horizon for coal is probably indicated by the presence of springs on Section 26 at about the 1,700 feet mark, though the boring at the Vaden mine showed nothing there as far down as that level. Along the eastern edge of Section 26 there are three small ravines with springs in each. The one near Mr. C. Corbett's house is about 30 feet deep and at an elevation of 1,700 feet a shallow well was dug through soil in which loose pieces of coal were found. The fact that the coal seams nearly always produce water would incline one to think that either coal or a very permeable layer of sandstone was situated beneath the tough clay which is reported as being bored through in another well near that at the house. Two miles south of this on the north-

Sec. 14. west quarter of Section 14, Mr. Hughes reports loose coal in a well

dug in a low spot east of the house. This is on nearly the same elevsation as the Corbett spring.

No other reported occurrences of coal were heard of to the west of this, and the wells in the vicinity of Goodland all seem to reach the gray shale below, which is probably Cretaceous, and the intervening sandy clays and shales which form the material between the elevation of 1,650 feet in Goodland and the foot of the slope at the 1,700 feet contour probably represent the Fox Hill sandstones.

Tp. 8, R. 23. North-eastward, the horizon at which the coal seams are supposed to occur does not appear to have been prospected or rather the bore-hores for wells have not been put down deep enough, so that very little information could be gathered. One exposure on the roadside in a shallow cutting at the north west corner of Sec. 8, Tp. 2, R. 23, shows a thin seam of lignite at 1,734 feet elevation. This is probably the same seam as the lowest streak of coal in Mr. Morningstar's well at 1,740 and the 1½ ft. seam in the flowing well at Vaden at 1,732.

Sec. 8.

Long ravine. A long ravine running from the mountain in Sec. 1, Tp. 2, R. 23, passing through Sections 11, 14 and 15, is cut down through about forty feet of the rocks but the exposures along the sides are concealed by surface deposits. A small exposure of sandstone can, however, be found on Section 15. The coal seams evidently should crop out on the sides of this ravine, as they have been found by boring in the centre of Section 11 at the bottom of the ravine near Mr. Duncan McArthur's house. Here three seams were found with thin clay partings and the two upper ones are thick enough to work. Subsequently a shaft was sunk from higher ground and for several years a small quantity of coal was taken out during the winter months.

McArthur's mine.

The section obtained by Dr. Selwyn, as published in the Summary Report for 1892, is given below. * 'On the north-west quarter of this Section, the owner Mr. Duncan McArthur has sunk several shallow pits, and a shaft 23 feet deep in which he states three seams of lignite coal were found with intervening clay strata.

	Feet.	Inches.
First seam at seventeen feet	2	6
Second seam at	2	6
Third seam at twenty-three feet, thickness not ascertained.		

All the workings were full of water at the date of my visit. From the specimens of the lignite shown me by Mr. McArthur, it appears to be of similar quality to that now being mined at Estevan, and would

* Summary Report, Geol. Surv Can., 1892, p. 4A.

certainly be a valuable fuel for local use if mined and sold at a reasonable figure.'

Sec. 11.

It is now about three years since this mine was operated, and as Mr. McArthur was absent, additional information as to the nature of the workings was hard to obtain. From Mr. R. W. Weaver of Deloraine, who had worked in the mine, I learned that the clay partings were not of great thickness, generally about 18 inches, but that sometimes the upper one disappeared or was replaced by coal and then the seam reached a thickness of six feet. The lower seam was not worked.

From my levellings the elevation of the ground at the pit is at about 1,825 feet. This would place the top of the upper seam at 1,808 feet and the bottom of the second seam at 1,802 feet. The seam slopes, according to Mr. Weaver, slightly to the north. This fall must be slight as at the next point where the seams have been bored into, at Mr.

Sec. 24.

Smith's on the south-west part of Section 24 in the same township, the elevation of the top of the coal is at 1,783 feet. This is about a mile and a half north and half a mile east of McArthur's, and shows a fall

Smith's 7 ft. seam.

in that distance of 25 feet. Mr. Smith in digging a well near his house struck the coal at 24 feet and dug into it three feet. He then stoned up the well but afterward was induced to try and ascertain the total thickness. His efforts in reaching the base in the narrowed diameter of the well enabled him to get down about four feet, so that he has hopes that the seam is seven feet in thickness.

Probable outcrop.

These estimates may be over rather than under the actual amount and it would seem, that here the two seams that occasionally form a six feet seam in the McArthur mine are brought together again. If there is over that amount here the seam should be worked, as fuel in the district is getting scarce and there is a large local market. The ravine leading north from McArthur's should afford good points for the mining of this seam without the necessity of raising and pumping by steam or other power. The slope in the ravine north is quite steep and the fall from the mine to where the road between Sections 14 and 15 crosses it is 57 feet, and 45 feet below the ground at Smith's house or well. It would thus seem that the lignite should outcrop in the ravine on Section 14 and along the sides on Section 15. At Smith's the coal can be got at from the level by a long open-cut from the north, as the ground slopes to the north and a point at the centre of the farm in a ravine which heads in two branches on either side of the house is 25 feet below the top of the coal.

Urie's well.

On the eastern part of this Section Mr. Urie has dug a well 50 feet deep without reaching the coal but as the elevation at his house is

about 1,830 feet his well at the bottom is very close to its probable position.* In the next township to the east very little was heard of any discoveries of coal, but there is one point of interest in connection with the possible future discovery of seams of workable thickness in the existence of a deep ravine crossing the western tier of sections, convenient points from which to work should be there found. From the levellings at Smith's and across the ravine on Section 19, Township 2, Range 22, it would seem that if the level of the seam continued to the east at nearly the same elevation, the outcrop would reach this ravine north of the centre of Section 19 and be found by drifting along the slopes as far up the valley as the road crossing at the south side of the same section. Mr. Renton who owns the section and lives on the south west corner of Section 20, has bored a well at the top of the bank near his house and by this has proven that there is no coal down to within a few feet of the 1,800 feet elevation. He has also sunk a well in the bottom of the ravine from about 1,788 feet and finds there loose pieces of coal. The question of the coal existing between these two elevations has therefore not been tested. Renton's section.

Eastward, in the next township, little could be learned of any discoveries of coal, but the lines of equal elevation follow a direction about E.N.E., and the probability of finding any would be greatest in Sections 19 to 24, although on Section 25, belonging to Mr. Shepard, loose coal is reported in a well in the bed of a ravine on the northern part. Higher up the slope there are, unfortunately, but few bore-holes, and the only discovery reported is of a seam a few inches in thickness on Section 4, owned by Mr. G. Rickard. In the mountain on Section 24, Tp. 1, R. 22, at an elevation of about 2,200 feet, Mr. H. Russell found a small mass of loose fragments of poor lignite in a small well near his house. This may have come from the drift, as this part of the mountain is thickly covered by boulder clay and there seems little evidence that exposures of the underlying rocks would be found in a shallow well. Tp. 2, R. 22.

On the road south from Boissevain, sections of the underlying strata are seen on the road cuttings and in a series of quarries to the south of the town. On the road passing along the eastern boundary of the township and at a point south-east of the town, sandstone of a soft character is obtained on the north front of the steep incline, and also in a deep ravine crossing the road. On the road a mile west, running south from the western edge of the town, dark yellow sand is exposed at the top of the hill in the road cutting at an elevation of 1,729 feet. South of Boissevain.

* In Dr. Selwyn's note-book for 1884, it is learned that Mr. Urie, west of Deloraine (Old Deloraine), cut 3 feet of coal in a well. What section this is on can only be conjectured as it is possible it is the Smith location.

Sandstone quarries.

A harder layer, and probably the same bed as that quarried in the hill a mile east, is exposed in the banks of a creek running through Sections 11 and 14 and stone for several fine buildings in Boissevain has been taken from a quarry on the south-west part of Section 11 or the adjoining part of Section 10. The upper part of the exposures along the creek are of dark yellow sand with a few reddish streaks from ironstone. This is also exposed in a ravine on the north part of Tp. 2, R. 19, and is mentioned by Dr. Selwyn in Report of Progress for 1879-80, p. 11A.

Below these sands at the quarry is a lighter coarse-grained sand in false beds and irregular layers not apparently hard enough for building purposes, but below this is a dark gray sandstone, the cracks and crevices in which are stained dark with iron rust. This stone is probably near the base of the series and may represent the Fox Hill sandstone at the base of the lignite Tertiary. This would consequently be the northern limit of the coal-bearing rocks of this area.

Shales north of mountain.

In the lower ground on which the town is situated wells that have been bored reach the shale which underlies all the country to the east and north as far as the edge of the Pembina mountain. The well bored on Section 19, five miles west of Boissevain, did not reach the shale, though 75 feet of drift were penetrated. A boring on Section 34 north-west of the town went through 63 feet of clay, 4 feet of sand and 103 feet of shale, and the well bored in Section 23, just west of the town, gives a section of 64 feet of clay and hard-pan and 198 feet of shale. This shows that the shale is the underlying rock up to the foot of the hill south of the town. The sandstone probably skirts the edge of the hill westward, and occasional outliers occur even as far west as Waskada in thin sheets and are pierced by wells. South of the quarry traces of coal have been found at several different horizons.

Tp. 2, R. 20.

The lowest coal heard of is in a well on north-east quarter of Section 35, Tp. 2, R. 20. There were three inches of very poor lignite at a depth of 12 feet from the surface. Elevation above sea of this coal is 1,772 feet. The next is on the south-west quarter of Section 24, same township, where Robert Johnston found four feet of lignite in a shallow well dug in a depression draining north near the western boundary of the section. The well is dug through eight feet of sand and clay and then through a four-feet seam of the coal. As it was full of water at the time of my visit the character of the seam could not be examined. The surface of the ground at the well slopes gently to the north, and though the seam is not far from the surface it would have to be worked by a shaft and drained possibly by a long drain or open ditch running from near the north boundary of the section.

Johnston's 4 ft. seam.

On the south-east quarter of Section 13, Mr. J. Dalrymple had a well bored in which the seam was reached at a depth of 25 feet, but the thickness did not seem to be as great as on the Johnston property. Samples of the coal which had been kept for over a year showed bright fractures and a good quality of lignite. The elevation of the seam is approximately 1,845 feet and at the former place between 1,836 and 1,832 feet. On Section 12, just to the south, Mr. Glover, who owns the east half, found coal in his well on the edge of a ravine which runs north-east across the section. At a depth of fifteen feet a two feet seam was passed and after boring through six feet of clay another seam was reached in which a supply of water was obtained. The thickness of this was not ascertained. As the ravine is twenty-eight feet below the well, curb these seams could be worked from the level very cheaply, even though there is not a great thickness of coal. The two-feet seam in Glover's well is at 1,898 feet and the top of the lower seam at 1,892. Glover's well.

A quarter of a mile up the ravine Mr. A. M. Ross also reached coal in a well at a depth of about forty feet. As the elevation of the ground is above that at Glover's, the same seams would probably be reached between forty and fifty feet below the surface. Other reported occurrences of finding coal in wells in this vicinity are on Sections 14 and 15, where Wm. Hall and Mr. Wilson both report reaching a seam at about 25 feet, probably the same one as the Johnston seam. Ross' well.

At Lake Max in the mountain at an elevation of about 2,200 feet, Mr. Cox, who lives on Section 31, Tp. 1, R. 20, dug a well for Mr. Kasper Killer on one of the islands, and at a depth of 27 feet found coal. This was not dug through but it tends to show that there is a possibility of there being several horizons above that outlined on the lower part of the slope of the mountain in which the lignite may yet be found in paying quantities. Lake Max.

Few reports of coal could be obtained from residents of the townships to the east. Many farms having changed hands within the last few years after the wells had been dug, the present owners have no knowledge of the strata passed through. On Section 27, Township 1, Range 18, a well is reported as having been bored through a coal seam, but the present owner could give no definite statement to that effect. On Section 15 in the same township shale of a light gray colour is exposed in the garden at Mr. Mitchell's house, and also in a shallow well in the bed of a small creek south of the house. There is no direct evidence of the presence of any coal, but it would seem to show that in places the surface covering is thin. On Section 12 an old resident Tp. 1, R. 18.

reported that coal had been found some years ago in a well, but the present occupier of the lot, Mr. Reedman, could not corroborate the statement. A new well at his house was dug through forty feet of sand and clay with no coal. Mr. E. C. Skinner on Section 18, Township 2, Range 17, found a small seam at 28 feet below the surface which he thought was about one foot in thickness. The elevation of this seam is approximately at 1,824 feet above the sea.

Bore-hole by Dr. Selwyn.

The Turtle mountain bore-hole which was sunk by Dr. Selwyn in 1880, is referred to in the report for 1879-80, p. 10A, and by a misprint its location is wrongly stated. Its situation is on the south-east quarter of Section 5, Township 2, Range 19, and is at the mouth of a small ravine just at the edge of the woods. The location seems to have been unfortunate as apparently there was a previous depression filled in with boulder clay and sands and gravel. The bore was carried to a depth of 200' feet without any seams being found. As the elevation of the ground there is about 1,955 feet, it seems remarkable that no trace of the seams which are known to occur at 1,835 and 1,890 feet, a short distance to the west should have been noticed.

Many occurrences have no doubt been missed in this hurried examination and more complete information might have been obtained had we means to test by bore-holes both along the outcrop and up the slope of the mountain.* In this manner a section of the mountain could be made. As it was, much of the time was taken in making a contoured plan on which to base future work.

The result of the series of levellings shows that though the coal seams are approximately horizontal, still there is a general slope to the westward of slight amount as well as a local bending to the north along the north slope of the hill.

Formation of coal.

The coal horizon does not appear to consist of a series of seams in continuous sheets but rather of deposits which are limited in extent though repeated over large areas and often superposed without the intervention of much sand or clay. A thick seam may thus be represented in an adjoining locality by a series of thin seams separated by sheets of sand or clay. The material from which the coal was derived seems in many instances to have been made up of a large percentage of woody matter, but a great part is probably composed of much smaller plant remains similar in character to much of that in our present swamps and peat bogs though of different species, such as would be

* Dr. Selwyn records a sample of coal from a well on Highman's location, Section 34, Township 1, Range 19.

found in a warmer climate. The shales above the coal in the Souris coal-field (a continuation of these deposits) contain along with a variety of tree leaves, the remains and impressions of many grasses.

The clays and sands which are contemporaneous with the coal seams contain fresh-water shells, so that the ordinary land conditions prevailed only at intervals and the vegetation which sprang up became concealed by deposits which were drifted over them by the invasion of fresh or brackish water. Repeated changes of this nature enabled the accumulations of similar material to be so piled one above the other that with a lapse of time the vegetable matter became so consolidated that its composition approached that of the older coals.

A Geological Reconnaissance about the Head-waters of the Albany River.

Dr. Alfred W. G. Wilson.

Instructions.

Your instructions of date May 24th, 1902, advised me that, in company with Mr. J. F. E. Johnston, C.E., of the Survey staff, I was to undertake a geological reconnaissance of a portion of the southern part of Keewatin district, lying to the east of the area explored by Mr. D. B. Dowling, B.Ap. Sc., in 1893. Mr. Johnston was delayed a few days at the office preparing plans for the season's work, but was able to meet me at Owen Sound on June 7th. We reached Port Arthur on June 9, where I purchased the bulk of our supplies and one large canoe. Leaving Port Arthur on June 10th we stopped off at Ignace to procure a canoe belonging to the department which had been left there by Mr. McInnes at the close of last season. We found that this canoe had been used by the man in whose care it was left and that it was not immediately available, being out at Sturgeon lake. I wired to Port Arthur for another canoe to be forwarded to Dinorwic, where we intended to leave the railway. We reached Dinorwic on June 11th, and were delayed there until the 14th, partly on account of the unsettled condition of the weather, and partly because we had to wait for the second canoe to reach us from Port Arthur.

Delays.

At Dinorwic we procured the balance of our supplies and engaged a crew of four men, three of whom had, the summer before, been over a considerable portion of the country we expected to explore. Leaving Dinorwic on the 14th of June we were delayed by unfavorable weather and did not reach Lac Seul Post until the 19th. Here we were again delayed some days, partly by unsettled weather and partly because at the time of our arrival the men were away with the York

boats and we could not at first find a guide who knew the Wenassaga route which my letter of instructions directed us to survey through to Cat river. Having engaged a guide, we left the post on the morning of June 23rd and reached the mouth of the Wenassaga river, a mile or two east of the outlet of Lac Seul, on the morning of June 29th.

Method of survey.

We had previously arranged that Mr. Johnston was to take charge of the topographic work, and that I was to attend to the geology, assisting Mr. Johnston where necessary by local surveys off the main line. Mr. Johnston began a log and compass survey of the route from the narrows of Lac Seul, running about eighty-five miles of line, to Slate lake on the Wenassaga, reaching there on July 2nd. On this date the Ashton Kay patent log he was using was accidentally injured, and he decided to run the line by micrometer telescope and compass as far as Gull lake. Continuing from here, surveys were made of seven lakes, varying in size up to about six miles in length. In most cases the shore lines were very complex, with many deep narrow-mouthed bays running off from the main lake, an incidental feature of the lakes of the Laurentian upland almost anywhere.

The height-of-land portage, half a mile in length, and longer than any of the 23 other portages between here and Lac Seul, was crossed on July 15th, and the survey of Big Portage lake, on the Cat river system, begun. The survey of this lake was finished on the 17th and on the 18th we crossed the short portage to the most western bay of Gull lake. Gull lake proved to be very large, with numerous deep bays, and our time until July 30th was employed in the survey of the portions of this lake which lay on the direct route, Mr. Johnston's survey being tied to Mr. Fawcett's line at the portage out of the south-eastern part of Gull lake—Smooth Rock lake of Mr. Fawcett's plan. As a considerable portion of our limited time had now been spent, we were compelled to leave several large bays of Gull lake, off the main route, unsurveyed. On July 30th we started for the Hudson's Bay Company's post on Cat lake, as from the account we had heard we judged that the balance of our time would be required for the survey of this lake. The post was reached on the evening of July 31st, and on August 1st the survey of the lake was commenced. The work was continually interrupted by bad weather, and the survey of the shore of the lake, and of the adjacent islands, occupied us until the 19th. As Mr. Johnston did not consider that the remainder of the time at our disposal was sufficient to complete the survey of the islands in the main portion of the lake, and as it was obviously too short to continue the line as far as the height of land towards Severn lake, I decided to return *via*

Gull lake.

Cat lake.

the Cat river route to the east end of Lac Seul, and to attempt to locate the southern boundary of the belt of so-called Huronian rocks which outcrop further east on Lake St. Joseph, or Osnaburgh lake. In descending the Cat river I made brief geological notes *en route*. We reached the mouth of a small creek entering Lac Seul from the northwest on August 26th. This creek flows through a rough country burned over about six years ago, and all its portages had to be cut out as we ascended. On August 28th we reached the limit of canoe navigation, the upper part of the stream being very shallow and blocked with timber, and started on our return trip, reaching Lac Seul next day. We returned directly to Dinorwic, arriving there on the evening of Sept. 2nd. Lac Seul route.

During the season we experienced much stormy weather with frequent thunderstorms, causing numerous interruptions of the instrumental work. The total of these delays in intervals of from one hour to a day and a half, caused a loss of about seventeen days in all. Towards the end of July and in the early part of August our work was materially retarded by some difficulties with our men, who were very much afraid of entering the country in the vicinity of Cat lake on account of current rumours respecting the dangerous character of the Indians of that region.

TOPOGRAPHY.

Topographically the region through which our exploration line passed is a portion of the great uplifted modified peneplain of the Archæan rocks of central Canada. Throughout this portion of southern Keewatin, the various water bodies lie in shallow basins in the peneplain surface. The maximum relief in the interior, except in the case of a few monadnocks, is rarely over fifty feet; near the southern boundary of the district, the relief is somewhat greater. In a few places, ridges or isolated more or less dome-shaped masses, rise above the general level of the peneplain. One of the most striking of these lies to the west of Cat lake and has an elevation above lake level of about ninety-five feet. Character of country.

The lakes are shallow, marshy, very irregular in outline, and at times more or less bounded by areas of muskeg (marsh). The interstream areas are bare, rounded or undulating surfaces of rock, frequently clothed, especially in the hollows, with a thin drift cover of sandy soil and boulders, overgrown and concealed by a dense mat of moss (generally *Hypnum triquetrum*) and interlaced roots. As a rule the drainage is very imperfect. Occasionally there are small areas, underlain by a thicker cover of drift or by a glacial sand plain, where the drainage is better and the moss cover is absent.

GEOLOGY.

Rock formation.

The rocks of the area may all be classed as Archæan. For the most part they are acid, igneous or metamorphic rocks, generally some variety of either granite or gneiss of some light shade of gray or pink. Associated with these, are several belts of dark-coloured, generally almost black, basic rocks, usually micaceous schists, less often hornblendic or chloritic, which are similar to those which have elsewhere been tentatively classed as Huronian. In general features they closely resemble the rocks in the vicinity of the Lake of the Woods classed by Lawson as "Keewatin"*. The broadest belt of these rocks was crossed by our line about 38 miles (by water) above Lac Seul, and extends in the direction of the line for a distance of about 20 miles. The precise width of the belt cannot be determined until the survey is plotted. Slate lake, around which the best exposuree are found, runs in a direction nearly parallel to the strike. The western extension of this belt is represented on Mr. Dowling's map of the 'Vicinity of Red Lake and part of Berens River,' and described by him in his report on that district.†

Three belts of Huronian.

A second narrow belt is crossed at the height-of-land portage leading into Big Portage lake from the waters tributary to the Wenassaga. The belt is narrow, probably not over a quarter of a mile in width, and exposures are few, at least near the portage. A third narrow belt (hornblende schists) is cut across by the narrow channel connecting the two western parts of Gull lake. In the vicinity of Cat Lake these basic rocks are known to occur only in a few localities, as small inclusions within the granites. Near the belts of basic rocks, it was found that there were generally numerous inclusions of the schists in the associated acid rocks in the areas on both sides of the main belt. At Cat lake a number of these inclusions are found, and there are also in places many drift blocks of similar material, so that it is quite probable that another belt of these basic rocks lies to the north-east of the lake.

Descending the Cat river a narrow belt of the basic rocks outcrops a short distance above Cross lake. Several other similar bands of the same rocks occur between here and Lake St. Joseph, particularly in the vicinity of Black Stone lake. A wide belt of these rocks, already referred to by Dr. Bell in early reports of the Survey, occurs at the south-west end of Lake St. Joseph. This belt extends towards the west and it is not impossible that the broad belt exposed in the vicinity

* Annual Report Geol. Surv. Can., vol. I, (N.S.) 1885, part cc, page 10.
† Annual Report Geol. Surv. Can., vol. VII, (N.S.) 1894, part F.

of Slate lake may represent its westward extension. The other narrower bands along the Wenassaga seem to have their counterparts along the Cat river. It seems improbable that they extend as continuous bands between the two localities.

ECONOMIC GEOLOGY.

Pyrites. In almost all cases these basic bands are found to contain small (more rarely large) veins of quartz. In some few cases there is a small amount of pyrite in the schists near the quartz veins. At the surface these veins and the associated schists present the usual rusty appearance due to the decomposition of the pyrite. In most cases the veins seen were small, and it is improbable that (with one or two exceptions) they carry anything of value. A prospecting party working in the district during the summer has located a number of prospects along the Cat river. Whether they have discovered anything of value is not at present known.

Molybdenite. The granites are occasionally cut by pegmetite dykes. In one locality near the head of Cross lake a rock, apparently of this character, carries a small amount of molybdenite in crystals varying up to about an inch and a half across. Whether the mineral occurs in sufficient quantity to be of economic importance has not yet been determined. The property is at present in the hands of Mr. C.W. Ross, of Dinorwic, to whom the writer is indebted for specimens of the mineral.

Magnetite. Near the inlet into Slate lake, about three-quarters of a mile from its north-east end, on the eastern shore, Mr. Johnston noted in the schists small stringers of a metallic mineral, probably magnetite, as the local variation of the compass was considerable. Magnetite in small amount is a constituent of many of the basic rocks. This was, however, the only locality where it was found sufficiently segregated to produce a noticeable local variation of the compass. No occurrence of hematite ores was noted.

TIMBER.

Timber. The timber throughout the areas where our explorations lay is small; in most parts of the district apparently too small for use even for pulpwood or ties. The general aspect of the forest and the age of the various kinds of trees indicate that forest fires have swept over the region at intervals. On the islands, or in localities otherwise protected, one frequently finds fairly large trees, so that there is no reason to think that the small size of the forest trees is to be attributed to the character of the climate.

GAME.

Game. Large game is fairly plentiful in the southern parts of the district, but in the central portions and around Cat lake it seems to be scarce. Game birds, except water fowl, are not plentiful. The region around Cat lake is a breeding ground of the mallard duck. The common fur-bearing animals of our northern districts are found here, though no species is very abundant, and some, particularly the beaver, are scarce. So far as could be ascertained, no brook trout occur in any of the streams; whitefish and sturgeon are taken in some of the larger lakes; pike are found in all the waters.

I wish, in conclusion, to acknowledge our indebetedness to the officers of the Hudson's Bay Company in charge of the posts at Dinorwic, Lac Seul and Cat lake, for many courtesies, particularly for the assistance rendered in procuring suitable men, and in storing supplies and outfit.

Region on the North-west Side of Lake Nipigon.

Mr. William McInnes, B.A.

Assistant. I left Ottawa on the 3rd of June, accompanied by Mr. E. A. Small, of Montreal, who had been appointed as field assistant for the summer. Mr. Small remained in the field until August 21st, when he was allowed to return in order to take up his work at McGill University.

After buying canoes and provisions, Nipigon station was left on the 8th of June, and Lake Nipigon reached on the 12th.

Starting point of survey. According to instructions, the work of the summer was to be carried on in the country lying to the west and north of the upper part of Lake Nipigon, with the object of gathering the data, both topographical and geological, necessary for the completion of the forthcoming map of Lake Nipigon and the surrounding country, and of exploring the district lying to the east of that reached last year from Sturgeon lake.

Trap hills. After being detained by heavy winds for two days, Nipigon House was reached on the 16th, and an examination of the shores made, up to the mouth of the Wabinosh river. A micrometer telescope survey was started from the mouth of the Kobka river (the south branch of the Wabinosh). The river, which was found to be at a very high

stage, shows here and there cut banks of a white, silicious sand, which fills the bottom of the narrow valley between the high trap hills through which the river runs.

Jegemassin and Kobka lakes, successive expansions of the river, are surrounded by high hills of trap, rising three hundred feet above their level. From Kobka lake a portage leads over a high hill rising 200 feet above it to Obowanga, the principal lake on the river. Extending south-east and south-west, it has a length of thirteen miles, and varies in width from half a mile to a mile. Everywhere along the lake the prevailing trap hills occur, though on the north shore these are some miles back from the water, the intervening flat land being occupied by an area of sand and gravel at a level of about fifteen feet above the lake. The main river falls into this sheet of water at its north-east corner. After surveying Obowanga lake, a stream entering its extreme western end was followed almost directly westwards. Leaving Obowanga, the underlying felspathic schists of the Huronian are exposed, striking about east and standing almost vertical. The stream followed proved to be a series of long narrow lakes connected by rapids and falls, the levels rising rapidly until, at about thirty miles from Lake Nipigon, a height of 1,350 feet above sea-level is reached, with neighbouring hills rising 200 to 300 feet higher. The north-west edge of the Huronian belt is here reached, the general trend of the contact being about north-east. No travelled route extends up this stream, so that it was necessary to cut out portages from lake to lake, most of them over very rough ground.

North-west limit of Huronian belt.

Returning to Obowanga lake, another route was followed from its south-west bay to Otter lake and thence westerly. Otter lake occupies a long narrow valley hardly wider than the lake itself, with high hills of Huronian schist rising on the north side 200 to 300 feet above its surface, and on the south side nearly 500 feet. The main inlet of Otter lake comes in from the south at the head of the lake, discharging through a gorge so narrow that, excepting at extreme high water, the stream makes its way underneath the piled up debris of angular blocks fallen from the cliffs on the sides. The stream occupies a narrow valley with a high cliff facing it on the west side, and still higher hills rising sharply on the east.

Otter lake.

Leaving Otter lake, a portage two miles long climbs in a steep slope up the almost vertical side of the valley, reaching a height of over 300 feet above the lake and descending again 100 feet to a smaller lake from which a portage three-quarters of a mile long leads to one of the head-waters of Gull river. Huronian schists occur all along, preserving

Route westerly from Otter lake.

a generally regular strike N. 70° E. and dipping nearly vertically. This branch of Gull river was followed westerly for about six miles, where its course changes somewhat sharply and it splits into two branches coming from the south.

Head waters of Albany river.

A series of lakes, flowing into this branch from the west, was followed and a divide crossed to lakes emptying northerly. Similar schists of the Huronian occur all along with the same general strike and dip and give place, at the head of this series of lakes, or 37 miles west of Lake Nipigon, to biotite granite-gneisses, which continued westward beyond Shishibak lake, the most westerly point reached. The country seen from this lake on every side, is comparatively flat, no hills rising more than fifty feet above the general level which reaches 1,600 feet, or thereabouts, above the sea. The forest growth is generally small, owing probably to the thin covering of soil; it is everywhere green and no general fire has burned over this area for a great number of years.

Obowanga lake to Gull river.

Returning to Obowanga lake, a route was surveyed from its southwest bay across to Gull river and thence down the river to Lake Nipigon. The southern edge of the Huronian belt above referred to lies about a mile to the south of Obowanga, where it is in contact with the granite-gneisses that continue to the south and is overlain by the traps of the Nipigon series on the east. The width of the belt of Huronian thus defined is about eight miles, measured where it disappears under the trap capping.

Gull river.

From the point where the Gull river was reached, to its mouth, it is a deep, smooth-flowing stream, broken in this distance (about 18 miles) by only three short rapids. It has a fairly uniform and strong current and has cut its channel to a depth of from ten to thirty feet in the drift deposits of the valley.

North branch of Wabinosh.

For the purpose of further exploring the area under consideration, the north branch of the Wabinosh river was then followed nearly to the height of land, and a series of lakes and streams lying further to the west was surveyed by micrometer telescope. These lakes and streams included a number that flow northerly by way of Smooth rock and Island lakes and the Okoki river into the Albany river. Among them Shawanabis has a length, east and west, of about sixteen miles with a long arm extending southerly at its western end.

Character of rock exposures.

The traps of the Nipigon series are the only rocks seen all the way up the north branch, with the exception of two isolated areas of gneiss occuring at Waweig and Washebimega lakes, where they are exposed by

the denudation of the overlying beds. The edge of the main area of the traps, where they overlie the gneisses, is reached at about three miles west of the north branch, beyond which only granite-gneisses occur.

Waterfalls. Leaving Shawanabis, a route was taken leading southerly through smaller lakes to the Kopka river, flowing into the east end of Obowanga lake. This is a river of fair size, the largest of the Wabinosh streams, that has not yet appeared upon published maps. Along its course occur a series of lakes, the principal of which are Kenakskanias five miles long, Wigwasaus six miles long, and Bukemiga eight miles long. Between Kenakskanias and Wigwasaus, in a distance of a little over a mile, the river descends 250 feet in a series of rapids and cascades.

At the foot of this drop the edge of the Nipigon series is seen, flat-lying beds of white and red siliceous sandstone protruding from beneath a thick covering of trap. From this point eastwards to Lake Nipigon the traps are continuous excepting where, in some of the valleys, denudation has exposed the underlying rocks in limited areas. These are elsewhere more particularly noted.

White Sand river. The White Sand river, which empties into Lake Nipigon on its western side two miles and a half south of Mount St. John, was then ascended and the lakes along its course examined. The river and its lakes lie in an extensive, rolling, sand plain, underlaid by granite-gneisses.

Through this overlying sand the river has cut to depths reaching in places 100 feet, and cut banks of sand of that height occur along its lower stretches.

Sand plain. The white siliceous sand covers an area many miles in extent. The surface of the plain is gently rolling, its generally level character modified only by occasional low ridges and by the valleys cut in it by streams. The tops of the ridges are generally quite bare of vegetation, the loose sand, readily drifted by the wind, affording no hold even for the mosses that cover it in more protected places. The side of the ridges and the valleys support a limited growth of coniferous trees of small size.

Pikitigushi river. The Pikitigushi river, flowing into Wendigo bay, was then examined. From the mouth up to Round lake its course is winding in the extreme and few exposures of the underlying rock are seen, the banks being made up of sand. Cliffs of trap are, however, seen here and there at

no great distance from the river. At the north end of Round lake a belt of Huronian schists and diorites form the hills back from the shore. Continuing up the river, its valley is found to have been cut down, through the overlying traps into the Huronian schists and granite-gneisses, the inclosing hills still showing cliffs of the overlying trap. The same conditions extend across the height of land and down northwards to the Okoki river, where the edge of the trap overflow is reached and where the granite-gneisses are seen, immediately underlying the traps, the latter cutting the gneisses in dykes, arms and irregular masses. To the northward of the edge of the main area smaller isolated areas of trap are here and there seen, generally in the form of conical hills, showing that the trap once extended for some distance to the north of its present limit.

Height of land.

Outliers of trap.

Excluding recent drift deposits, there are represented in the area under review, only the granite-gneisses and crystalline schists and associated rocks of the Laurentian and Huronian and the uncomformably overlying sedimentary series of sandstones, limestones, etc., known as the Keweenawan or Nipigon series. All of these are cut and overlain by a later basic intrusive that varies from a fine diorite to a coarse gabbro.

Topography. This sheet of trap gives to the whole basin occupied by it a highly indented topography, characterized by high, comparatively flat table lands, intersected by deep narrow valleys. The sandstones and limestones are seen at but few places, at the base of cliffs of trap that overlie them and at the edge of the basin where they protrude from underneath the trap. Outliers are seen in a few places lying on the old rocks at some distance from the confines of the main area, but for the most part they have been entirely denuded where unprotected by the capping of more resistent rocks.

Dykes. Where the underlying gneisses are exposed near the edges of the trap-covered area both on the west and north they are cut by numerous dykes of the intrusive rock, long apophyses extending off in places far into the gneisses forming ridges that by their black colour are in sharp contrast with the invaded gneisses. This dissimilarity has induced some prospectors to locate claims presumably for iron, or perhaps for general results, along these arms.

Economic minerals. No minerals of economic importance have been found in the district, though the belts of Huronian schists to the north and west of the lake make the occurrence of gold and iron not improbable. Iron ore, in the form of float, has been found at several points, but its source up to the present is not known. A deposit of iron pyrites of considerable

extent occurs on the Pikitigushi river. Some of the siliceous sandstones, which vary in tint from white to pinkish red, are of very even grain and would make good building stones were a demand for these ever to arise.*

Agricultural land.

Lands suitable for agriculture are confined mainly to the immediate shores of Lake Nipigon and to the valleys of the larger rivers and lakes. At Nipigon House the ordinary varieties of garden vegetables succeed very well; clover and various grasses grow luxuriantly, and oats sown late grew very long and strong, but were hardly ripe before the early frosts.

Mammals.

Moose were found to be numerous in the district during the summer; caribou fairly plentiful, and Virginia deer rare. One wolf was seen, and the tracks of others, running singly were observed. Bears, beaver, otter, marten and other fur-bearing animals still occur in good numbers, the unburnt condition of the forest favouring the preservation of the smaller fur-bearing animals.

Fishes.

Many of the streams entering Lake Nipigon abound in speckled trout *(salmo fontinalis)* of large size. In the White-sand river they were particularly plentiful, those caught varying in weight from one pound to three pounds. On the maiu lake one was taken that scaled six and a half pounds, and the diary at Nipigon House, the Hudson's Bay Company's post on the lake, records the netting of a twelve-pounder. That this was really *salmo fontinalis* there can be no room for doubt as the lake trout and brook trout are well known and clearly distinguished from each other by both the company's officers and the Indians. Whitefish and lake trout are also plentiful in the main lake, and lake trout, pike and doré in most of the smaller lakes.

I left Nipigon House on the 7th of October and reached Ottawa on the 16th of the same month.

Region Lying North-east of Lake Nipigon.

Dr. William Arthur Parks.

Area examined.

I have the honour to submit herein a summary report on the geology, physiography, economic resources, etc., of the region lying north-east of Lake Nipigon in the province of Ontario and constituting the eastern half of map-sheet No. 17 of the northern Ontario series. This sheet comprises an area measuring 72 by 48 miles, of which a considerable part is covered by the waters of Lake Nipigon. The area which I was

* Dr. Bell with several assistants surveyed Lake Nipigon in 1869 and his report of that year describes the geology of its shores.

instructed to explore contains about 1,500 square miles of land surface, roughly defined as follows :—

The territory lying north of a line drawn due east from a point on Lake Nipigon, two miles south of Mungo Park point, a distance of about 25 miles west of a line drawn due north 48 miles from the eastern termination of the above east and west line, and south of a line drawn westward from the northern termination of this meridian, a distance of about 45 miles to the Jackfish river.

Previous work done.

The shore line of Lake Nipigon bordering this region to the westward was examined by Mr. Peter McKellar acting under the instructions of Dr. Robert Bell, in 1869. At a later date, 1892 and 1898, Messrs. Dowling and McInnes made some further and possibly more minute surveys of parts of the shore line and some of the islands. The country inland was, however, practically unexplored, with the exception of the instrumental survey of the Obabika river made by Dr. Bell in 1871, when en route to the Albany river.

Instructions.

Early in June, I received instructions from Dr. Robert Bell, Acting-Director of the Geological Survey of Canada to proceed to this field and to examine as fully as time would permit the various features commonly dealt with in a geological report, as well as to extend our knowledge of the local geography by making track surveys of all water-courses in any way accessible. Special attention was to be given to the economic resources of the region and the condition of the timber throughout the district.

Route followed.

Pursuant to these instructions I left Toronto on June 10th, proceeding by rail and steamboat to Port Arthur where a day was spent purchasing supplies, etc. On June 14th, I proceeded to Nipigon where I met my assistant, Mr. Paul Smith, of Windsor, Ont., and where I secured the services of two canoemen for the summer, as well as an additional man and canoe to assist in transporting the supplies up the river. On the evening of June 18th we camped at the north end of Flat Rock Portage on Lake Nipigon and were forced by a strong north-west wind to remain there the following day, but by paddling all night, we were enabled to reach Poplar Lodge on the morning of June 20th. This point we made our headquarters during the summer, and I was fortunate in exchanging the large cedar canoe with which I had ascended the river for two smaller ones, more suitable for inland work.

Itinerary.

Having paid off one man, we proceeded directly to the Red Paint river, the exploration of which stream and its tributaries occupied us until July 16th, when we regained Lake Nipigon. Finding it neces-

sary to go to Poplar Lodge for supplies I directed Mr. Smith with one man to proceed to the mouth of the Obabika river and await us there, while with the other man I went to Poplar Lodge and thence to the Obabika. Reaching there, I was surprised to find that Mr. Smith and man had not arrived. It appears that they had become lost on the lake and had wandered around for five days before we finally encountered them off Mungo Park Point. Arriving at Poplar Lodge I directed Mr. Smith to remain there until the kindness of the Algoma Commercial Company should afford an opportunity for his transportation down the river. From this time on, the work was continued with two men and one canoe. During the search for the missing men, I succeeded in working out the geology of the shore line between the Red Paint and Obabika rivers. On July 26th we started the ascent of the latter river and carried a traverse to the border of the sheet. Several overland expeditions were made and two connections established with previous excursions from the Red Paint. A winter road north of the river gave access to the lake at the head waters of the Kabasashkandagogama river, thus extending the section north and south a considerable distance. The more westerly section was brought to the northern boundary of the sheet by the northward tendency of the river from Summit lake on the Obabika. The work on this river was finished by August 10th. Thinking it advisable to examine the eastern extension of the South Obabika trap area, a trip overland was made from the south-east corner of Obabika bay, and to determine the elevation of the trappean hills forming the south peninsula of Obabika, an excursion was made across this strip of land.

Jackpine river.

On August 14th we began the exploration of the country accessible by the Jackpine river which enters Obabika bay from the north. This stream was ascended as far as the border of the sheet and expeditions were made eastward from it. The Jackpine forms part of a canoe route to the Albany and connects with a route via the Obabika. On our return from this trip on August 18th a few days were spent in attempts to ascend the small streams entering Obabika bay from the eastward, but owing to their small size and the burnt character of the country but little return was obtained for the time and energy expended. Finding that the time could be more advantageously spent in the southern part of the sheet, we returned to East bay and ascended to the large lake crossing Beatty's line known as 'Little Long' lake, 'North Wind' lake, &c. From this lake expeditions were run north to the Red Paint river and eastward to the large lake forming the source of the south branch of the Red Paint. Though we failed to reach the big lake the expedition proved of service in fixing the position of the lake called Crooked Green on Mr. Dowling's plan. On August 29th I walked over-

land from the southern point of "Little Long" lake to the Sturgeon river in order to mark the rock contacts and to examine the timber of this region. The Sturgeon river was then ascended to the mouth of a large brook entering from the north about a mile west of the big bend. A traverse was carried up this river in the hope of making a connection with the aforementioned large lake on the Red Paint. We were successful in this as well as in locating some important contacts of rocks I had hoped to find. Poplar Lodge was reached on the return trip on September 7th. A heavy gale prevented our moving until Tuesday the 9th, but having recourse to the expedient of night travelling we arrived at Camp Victoria the next night and reached Nipigon station on the afternoon of September 11th. I paid off the men there and went to Port Arthur the same evening where the final business connected with the expedition was settled. I reached Toronto on September 14th, having been absent on the survey 94 days.

Sturgeon river.

Duration of trip.

The lines of survey above indicated were all conducted on "track" methods, connections to known points being made where possible, which frequently entailed arduous overland expeditions. Owing to the heavy nature of the travelling but small rock specimens were brought, about 150 of which are now awaiting examination. A daily record was kept of the pressure of the atmosphere and of the temperature of both air and water. The weather during the summer was very wet, thunderstorms and heavy rain being of frequent occurrence. In ten years' experience of northern Ontario I have no hesitation in pronouncing this the wettest season I have spent in the bush. The continual rains had the effect of keeping the poisonous flies in life long past their usual period of activity, both black flies and mosquitoes being in evidence up to the last day we were in camp. The highest temperatures recorded were 78° on July 1st and 79° on August 3rd, and the lowest day temperature 42 at 11 a.m., June 26th. Much lower night temperatures prevailed, ice being formed on several nights in August and September.

Nature of work done.

Temperatures.

PHYSIOGRAPHY.

The region under discussion, omitting certain trappean areas along the shore, consists of a table land not exceeding 400 feet in height, falling with some abruptness into Lake Nipigon. The height of land between the Nipigon waters and those flowing north and east may be said to lie just within the eastern border of the sheet and to be represented by an extensive level swampy tract extending from the vicinity of the 'dam' on the Sturgeon river northward to the boundary of the sheet. This wet area supplies a large brook entering the Sturgeon at

Character of country examined.

the point above referred to. It sinks into a depression occupied by a large lake forming the head-waters of the south branch of the Red Paint river, supplies the drainage at the source of the north branch of this river and is responsible for Summit lake on the Obabika river, the head-water of both that river and a stream flowing north to the Albany river. This level tract is fringed on the west by a more rocky area and, at some points, considerably higher land through which the various rivers break on their way to Lake Nipigon. Evidences of considerable dissection are observable between this fringe of hills and the lake, giving a rough aspect to the country in places and producing a relief of about 400 feet. The general lines of dissection have followed the synclinals of the rock, the axes of which extend in a direction north of east and south of west. Erosion of these lines is facilitated in the Huronian areas by the correspondence of the prevailing strike with this general direction. The region is therefore a dissected tableland with a somewhat abrupt fall to Lake Nipigon and a gradual ascent to the eastward, followed by a minor descent occupied by a wet area constituting the source of a number of rivers. This general structure is, however, modified along the shore by the deposition on the flanks of the plateau of a coarse sandstone, overlaid by a trappean belt of about 300 feet in thickness. This basic rock forms a ridge, interrupted in places, extending along the shore line from the north to the south of the sheet. At its northern end this area is more distinctly ridge-like, while its southern extension attains a much less pronounced elevation and stretches farther inland. This structure is shown in the character of the shore line, for the northern ridge has obstructed the egress of the waters from the east, turning them southward and causing them to hollow out a shallow bay between the edge of the plateau and the range of trappean hills. At a later age an opening was eroded through the ridge so that the waters entering this bay, Obabika (Steep Rock gap) no longer were forced southward but escaped into Lake Nipigon by the means thus afforded. At the southern border of the sheet, the previously described contour is not materially affected by this trappean rock as its elevation is inconsiderable, but on proceeding northward, it becomes more pronounced, forming a promontory of 200 feet elevation at Livingstone point. This point is now an isolated mass as the forces of erosion have worn away the connecting rock both to the north and to the south forming deep bays, called by Dr. Bell, Humboldt and East bay respectively.

Red Paint river.

Nature of surface erosion.

Basic work.

Trap masses.

The Sturgeon river, entering Lake Nipigon just south of our sheet, is the main line of drainage from the east; immediately north of it a rocky hill of 200 to 300 feet rises abruptly to the level of the plateau.

Lines of drainage.

From this region the waters drain south by tumultuous streams into the Sturgeon. On ascending this river the banks are seen to have a lower elevation, and finally, at a point about 20 miles up, we enter the previously described low area, the southern part of which is drained into the Sturgeon by a stream from the north and west. Towards the north-east the marshy land extends to a large lake stretching for about 12 miles in the same direction and forming the source of the south branch of the Red Paint river. This stream falls over a granitic barrier and passes through the aforementioned ridge in a denuded valley, after running a few miles through the level country. A succession of shallow rapids continues to a lake a few miles long, below which the river is broken by some short rapids to the junction of the north branch. Below the junction one long rapid with a considerable fall intervenes before the stream passes into quiet water which extends for five miles to Lake Nipigon. The north branch is a smaller stream uniting with the former about seven miles up; its course is somewhat south of west, and a slightly different country is shown in the more numerous lake expansions on its course which approximates to the Huronian-Laurentian contact. This branch also traverses the low-lying tract, but its head-waters are in the more elevated land farther to the east. About one-third of the way from its mouth, the Red Paint river receives a tributary on the north which drains a considerable depression stretching for eight to ten miles in that direction. This depression is occupied by a number of long narrow lakes with a general north-east and south-west disposition. Continuing northward from the source of the Red Paint, the low land extends to a lake forming the source of the Obabika. This lake is three miles long, and from it a stream, still in the low land, leads to a lake about seven miles east and west which discharges by a sluggish stream into a muddy lake stretching three miles north. This lake occupies the Lake Superior-James Bay divide and sends a stream in both directions. The former, the Obabika, continues in the swampy land to Cross lake, where the higher land is met and the waters begin to fall over the ridge towards Lake Nipigon. They continue in a south-westerly direction through a Laurentian region, the only considerable tributary entering from the south and arising in the same depression of which the southern drainage falls away to the Red Paint.

Red Paint river.

Height of land.

North of the Obabika several small streams, not navigable, enter Obabika bay in a south-westerly direction. The most southerly is the Kabasashkandagogama, draining a lake of the same name which is accessible, not by the river, but by a small stream entering the Obabika from the north.

At the north end of Obabika bay a stream known as the Jackpine comes in from the north, its lowest seven miles traversing a sand plain with jack-pine, above which point the country becomes more rocky and passes beyond the borders of our sheet. Sand plains.

GEOLOGY.

Three different formations can be recognized in the region—the Laurentian, the Huronian and the Animike. The Laurentian is represented by gneisses and granites varying from types with the most pronounced lamination to those of massive granitic structure. On the whole the rocks commonly classed as Laurentian, as far as this region is concerned, consist mostly of hornblende granite becoming gneissoid in places. An area of rock of this kind enters the northern boundary of the sheet at a point seven or eight miles from the north-east corner. It extends in a south-west direction to an apex a short distance west of Cross lake, where it again sweeps eastward and, after a considerable curve in this direction, reaches another westerly apex in the depression north of the Red Paint river. The line of contact then makes another easterly curve and turning west cuts off part of the Red Paint, finally reaching the shore of Lake Nipigon at a point just north of the mouth of this river. The area north and west of this broken line is occupied by Laurentian granites and gneisses, while that south and east is a region of Huronian schists. A second granitic area surrounds the large lake at the source of the south branch of the Red Paint, and seems to fringe the lake as a belt not over three miles wide. A third region of Laurentian rock lies inland about two miles from East bay. Like that just described, its centre is occupied by a large lake of eight miles extent, lying in a north-easterly direction which the rock surrounds as a narrow fringe. This is essentially a granitic type. Rocks of a more gneissoid appearance crop out along the shore of East bay, and in a south-east angle of Humboldt bay. I am inclined to regard these as a southerly extension of the large area of similar rocks already described. Geological formations. Hornblende granite. Three Laurentian areas.

Except along the lake and in a limited portion of the south-west corner of the sheet, the remaining area is occupied by Huronian rocks, generally tilted at high angles with a strike averaging a little north of east. The schists are usually of an acid type, apparently mostly of quartz-porophyry origin, mixed with volcanic clastics. Basic schistose bands occur with much less frequency, as well as limited belts of diorite and diabase. Huronian rocks.

Resting on the flanks of the northern Laurentian area, particularly south-east of Obabika bay, as well as in the north-east and south- Animike sandstone.

east angles of Humboldt bay, are small areas of white to pink coarse-grained sandstone, referable to the Animike series. Smaller outcrops of this rock also occur at a few points along the western shore of the south peninsula of Obabika. In every case these deposits are covered by a dark basic rock of diabase structure rising to an average elevation of 300 feet. This Animike trap forms the whole of the north peninsula of Obabika, and, excepting a narrow fringe where the underlying gneiss is exposed, the whole of the south peninsula of the same name. The third area, the one with which the sandstone is particularly associated, lies east of the isthmus of Obabika and extends about five miles inland. Livingstone point, south of Humboldt bay, is a narrow peninsula composed of trap at its eastern extremity. This rock overlies a bed of sandstone at the western end of the point and extends a mile or two inland as a narrow belt overlying the Huronian. The final trappean area forms a line of contact from the soath-east angle of East bay in a south-easterly direction for about eight miles, when it turns south and crosses the Sturgeon river at the top of the long rapids. The southern boundary of this area begins in a cove north of Poplar point, and stretches to the foot of the long rapids. It is this belt of trap that is responsible for the heavy rapids at this point.

Animike trap.

Contracts of trap and Huronian.

SOIL AND TIMBER.

Character of soil.

The height of land region at the eastern border of the sheet, though level and swampy, is mostly of a sandy nature as revealed in the river cuttings in the district. The rocky land farther west is covered, where any soil is developed, by shallow beds of sand, while the slope to Obabika bay and Lake Nipigon presents much more clay. Therefore, the best agricultural land in the region is to be found in a belt of about five miles width along the shore, particularly along Obabika bay and in the region immediately east of Humboldt bay. North of Obabika bay a little clay is found, but extensive sand plains cover it as we proceed northward.

Timber.

The timber in the height of land region is small spruce and tamarack with Banksian pine on the sand plains and higher land. The central rocky region is better timbered, particularly along the rivers, but extensive fires have wrought havoc with the once abundant wood in these highlands. Both for agriculture, and for timber, the best is to be found on the clay land bordering the lake. Along the north shore of Obabika bay fires have practically destroyed the timber. On the lower reaches of the Obabika, however, and in the depression connecting that river with the valley of the Red Paint good stretches of spruce, balsam, poplar and birch still exist. Also north of the Obabika towards the

Kabasashkandagogama and along East bay good timber is to be seen. The marketable spruce, which is really magnificent in this last region, has been unfortunately cut off a few miles east of 'Little Long' lake by an extensive fire from the south-west. All along the Sturgeon the timber is small, of about 20 years growth, while in the south-east corner of the sheet still younger forest is found. An attempt will be made in the final report to map the different areas of forest growth so as to bring out the disastrous effects of forest fires. For instance, one fire about five years ago started somewhere north of the mouth of the Sturgeon and swept across the country in a north-easterly direction, devastating the upper valleys of both branches of the Red Paint and stretching beyond into the basin of the Obabika.

ECONOMIC GEOLOGY.

Iron.—In the region lying immediately south of this sheet are three or four bands of Huronian rock sufficiently ferruginous to be known as the iron range. These deposits have already been described and need no further comment here. Both the Algoma Commercial Co. and the Flaherty syndicate, which have been engaged in extensive explorations on these ranges, have recently abandoned the region. This cessation of operations does not prove the worthlessness of the deposits, but merely that the expiration of options and heavy financial engagements elsewhere diverted the tide of prospecting from this region. Iron deposits similar to the above have been reported on the Red Paint river, but my observations, as well as the more detailed work of the above mentioned companies, failed to reveal any jasper bands, the infallible index of the iron range. One Andrew Green staked claims on Red Paint lake and at different points in the vicinity; the iron, however, is merely limonite and ochreous hematite in small masses, resulting from the decomposition of pyrite which occurs in certain sugary quartz seams running parallel to the inclosing schists. Iron ores.

Gold.—The Huronian rocks as usual carry small stringers of quartz, some of which may prove auriferous. On the south branch of the Red Paint, on Cross lake and on the upper portages of the Sturgeon good indications are seen, as well as on the streams over the height of land towards the Albany river. Specimens from the Obabika yielded traces of gold to the officers of the Crown Lands Department of Ontario. No indications of other metallic substances were seen. Of the non-metallic products certain of the fissile schists, particularly on the Sturgeon, would be useful for whetstones. Much of the clay along the shore line would be suitable for the manufacture of bricks and possibly would be of use for pottery. Gold.

Acknowledgments.

In closing, I wish to express to Mr. Edey of the Algoma Commercial Co., to Mr. Patterson of the Hudson's Bay Co., and to the officers of this company at Nipigon my sincere thanks for many acts of kindness during the summer.

Reconnaissance Surveys of Four Rivers South-west of James Bay.

Mr. W. J. Wilson.

Instructions.

Your instructions directed me to explore and survey the country lying between the Attawapiskat and Albany rivers, and also the country between the Albany and Moose rivers on the west coast of James Bay. In the first place you pointed out that the Kapiskau river would afford an easy means of access to the former region, and that there was reported to be a canoe route from Moose Factory to Fort Albany which followed branches of the Moose and Albany rivers flowing through the centre of the latter area; also to make a micrometer survey of the Abitibi river from the upper crossing of Niven's line to Moose Factory and to run a micrometer line from the latter point to the crossing of Niven's line on the Moose river.

Itinerary.

I left Ottawa on the 24th of May, accompanied by Mr. Owen O'Sullivan of this office as assistant, and proceeded by the ordinary canoe route from Lake Temiskaming to Moose Factory. We engaged two Indians at North Temiskaming and one at Abitibi Post who remained with us all summer, and besides these three we employed guides for short periods, who knew the different rivers we had to explore.

Kapiskau river

We reached Moose Factory, June 20, having been delayed very much by stormy weather. We went from Moose Factory to Fort Albany in our canoes along the coast, and after securing a guide and supplies for six weeks we continued in a boat to the mouth of the Kapiskau river, which we reached July 2. We made a micrometer survey of this river for 200 miles up. At this point the numerous short bends in the river made progress so slow that it was deemed advisable to stop micrometer work and separate into two parties. This we did July 21. I followed the main stream making a track survey for about eighty miles, and I also explored some of the larger branches as far as I could ascend them with a canoe. Mr. O'Sullivan returned to the forks forty-four miles up from the mouth and made a track survey of the south branch called Atikameg (Whitefish) river by the Indians. He continued up this river 135 miles.

Atikameg river.

* Dr. Bell's report for 1869, describes the geology of both sides of Lake Nipigon and that for 1871, the geology of the Obabika river and the route thence north to the Albany.

Having completed the examination of the two principal branches of the Kapiskau, we returned to the mouth of the Otadaonanis river, a large tributary which joins the main stream four miles from James' bay. Here Mr. O'Sullivan remained to make astronomical observations and to extend the micrometer survey out to the bay, while I made a track survey of the branch referred to above. We then returned south, Mr O'Sullivan making a track survey of the coast between the mouth of the Kapiskau and Fort Albany. At the latter place we again separated to examine the country between the Albany and the Moose rivers. Mr. O'Sullivan went up the Albany to the upper end of Big island where a large river, called by the Indians the Kwataboahegan, enters from the south. He explored this river to its source. It forms part of a canoe-route between Moose Factory and Fort Albany used by the Indians only at high water, but no one seemed to know whether it would be possible to go through at this season, (August 11). The branch which forms the southern part of the route is known by the same name and enters the Moose river about fifteen miles south of Moose Factory, measured along the common canoe-route. The Albany branch is also known by another name which means Stooping, river, and to prevent confusion I have used this name on the accompanying map. Returning from Fort Albany to Moose Factory, I made a track-survey of part of the coast. On the 16th August, I reached the mouth of the Kwataboahegan river, on the Moose side, and began a track-survey of it, which I continued for ninety miles up. Having met Mr. O'Sullivan, who was successful in getting through, we completed the examination of this river and returned to Moose Factory, where we repaired our canoes and got supplies for the trip home. Leaving this post early in September, we made a micrometer survey of the Moose river up to the intersection of Niven's line, (1898) a distance of thirty-one and a half miles. We then returned to the Abitibi river and continued the survey up that stream to the intersection of Niven's line, at the 179th mile post, connecting with my survey of last summer. This completes the instrumental survey from Moose Factory to Lake Temiskaming by way of the Abitibi river and lake, and the canoe-route to Quinze lake. We finished the survey September 24, and came directly to Ottawa which we reached October 8.

Otadaonanis river.

Kwataboahegan river.

Abitibi river.

THE KAPISKAU RIVER.

The Kapiskau is about a quarter of a mile wide for some distance from the mouth and has a width of from seven to ten chains to the forks. At forty miles up, a section was made which showed that the volume of water at this point was 566,000 cubic feet per minute (July 4). The width is seven chains with an additional three chains

Kapiskau river.

for ordinary high water, and the greatest depth is eight feet. The current is swift and strong with frequent rapids which become more numerous as the river is ascended up to 212 miles. Then for a distance of twenty miles there are only a few rapids and moderate current, followed by thirty miles of swift water and rapids. Above this there is almost still water to the Kapiskau lakes and for some distance beyond. The fall in a few rapids amounts to three or four feet, but for the most part it does not exceed one foot, and many of them are mere ripples which I presume disappear in high water. In the whole distance travelled on this river, we did not require to make a single portage.

Character of river valley.

The river has no distinct valley, but has cut its way into the thick clay covering that overlies the solid rock or into the soft rock itself. The banks are generally low, rising from five to twenty feet, and usually the land along the river for four or five chains back is higher than that farther away. The sediment deposited by the river when it is swollen by the spring freshets has accumulated year after year and has slowly built up a ridge close to the stream. It is also possible that the ice may have assisted in piling up the material along the banks in the same way that the shooting dykes are formed along the rivers in eastern New Brunswick and Prince Edward Island. This narrow ridge is well wooded where not burned, with large spruce, poplar, and at some distance from the coast, canoe-birch, fir, balm of Gilead and an occasional tamarack and cedar. The tamarack here has escaped the ravages of the larva of the imported larch sawfly that has done so much damage to it farther south, so that where it does occur it is green and healthy. Back from the river five, or six chains, the trees are much smaller and in many places nothing is seen but muskeg thinly covered with stunted spruce and tamarack two to eight inches in diameter, and an abundance of laurel (*Kalmia angustifolia*) and Labrador tea (*Ledum latifolium*).

Forest growth.

Clay, sands and shells.

For the first 125 miles the banks are composed of bouldery clayey and stratified clay and sand containing marine shells. At this distance the first rock exposures appear. The rock is a very soft reddish-brown argillaceous limestone mottled with greenish-gray spots and some layers are wholly of the latter colour. In places layers of the two colones alternate. The beds as far as observed are horizontal. Near the surface where the rock is exposed to the weather it is broken up into small pieces, and when wet very readily changes into mud, but in digging down much larger and firmer masses are found. The rock where first seen and for several miles up the river, is so soft that the river banks are worn down just the same as clay banks, and no cliffs are seen. This continues up for more than fifty miles from the

first exposure, when a considerable change takes place. At the 183rd mile of the micrometer survey a cliff nearly thirty feet high occurs, a section of which is as follows in descending order :—

Section of limestones.

	Feet.
Grayish limestone in angular blocks, firm	3·0
" " " much broken, soft	1·6
" " " slightly mottled with red	1·3
" " " very soft	0·6
" " " mottled with red, fairly firm	1·5
" " " very soft	0·7
" " " mottled with red	1·3
Grayish and reddish limestone very finely broken	0·4
Reddish limestone mottled with gray	1·8
Grayish limestone, very soft	0·2
Reddish limestone, crumbling	1·2
Grayish limestone, firm	1·0
Mottled reddish and grayish limestone, very soft	1·3
" " " " firm	1·1
" " " " washed and covered by the river at high water	10·1
	23·10

Limestone outcrops.

For twenty-two miles above the point where this section was made occasional outcrops of similar rocks are exposed along the banks, but for the last ten miles they are considerably firmer and of a light yellowish or buff colour. This is well seen at the last micrometer station, 200 miles from the coast. Only one more exposure of rock was seen and that was about five miles farther up the stream, or 205 miles from the bay. These distances are given from the micrometer survey and of course follow all the bends of the river, and this makes the distance much greater than if measured in a straight line. No fossils were found in any of these rocks but in their lithological characters they resemble very closely the Devonian rocks at the Sextant rapids, Abitibi river, where there are bands of the reddish and grayish rocks which both in the ledge and in hand specimens are identical with those on the Kapiskau river. The rocks on the Abitibi underlie beds containing typical Devonian fossils.

Level country.

For 175 miles up the Kapiskau river the country is as flat as it can be and not the slightest elevation is apparent. At the end of this distance, however, the character of the country somewhat changes and for the next 25 or 30 miles up the monotony is relieved by low hills 75 feet high which give a rolling aspect to the country. These hills were evidently formed by erosion and are comparatively level on the top. This area is drier as the soil contains much sand and is covered for the most part with a thick second growth of poplar and canoe-birch with many dry trunks of trees standing or lying scattered over the ground. Going west up the river, the land again becomes flat and the current is

not so swift or the rapids so numerous, and at 260 miles the stream becomes much broader and forms a lake-like expansion of comparatively still water for six miles, when it opens out into a small shallow lake. This lake is only one mile long and half a mile wide, but is of some importance as it gives the name to the river. When approaching this lake in a canoe there is no channel or passage visible as it is filled with tall scouring-rushes (*equisetum*) and the canoe has to be forced through these across the lake. The word Kapiskau means obstructed or blocked up and was first applied to this lake and afterwards to the river. For the next mile the river flows from the north-west in a sluggish broad stream with marshy banks, and again expands into a narrow lake running north and south for three miles. At the extreme north end, the river enters and for four miles is almost dead water, after which it has a swift current with occasional rapids as far as it was followed, a distance of seven and a half miles from the lake. At the point where I turned back the river was from 30 to 40 feet wide and in places four feet deep, while in other places there was not enough water to float a canoe. It was blocked every few chains with log jams and fallen trees which reach from bank to bank. We had to cut our way through these and this made progress so slow that I decided to return, having first climbed a tree which gave a view of the country for a long distance and nothing could be seen but a broad plain covered with ragged bush with an occasional clump of large green trees mostly spruce, poplar and tamarack, but the area within a radius of five or six miles that is so covered in any one place is small. A small stream enters the largest of the Kapiskau lakes from the west but it proved to be full of boulders, driftwood and rapids so that it could not be navigated by canoes for more than a mile.

Character of Kapiskau river.

Half a mile west of the south end of the lake there is a ridge which, though only 75 feet above the level of the lake stands out prominently from the level country. An examination showed that it is composed chiefly of gravel. It has the form of a kame and is about 20 chains long and 500 feet wide. It is sparsely covered with Banksian pine, canoe-birch and poplar. Viewed from this elevation the whole surrounding country is a vast plain. The only rise to break the monotony is a slight elevation five or six miles to the north. There is a small lake a mile to the south and peaty swamps are common. These are covered with small spruce and tamarack, and the drier ground with second growth poplar and canoe-birch. The aneroid readings give an elevation of about 400 feet above sea level at these lakes.

Gravel ridge.

Elevation.

Large areas are covered by peat bogs, especially along the upper stretches of the river and often the top layer along the almost perpendicular bank is composed of peat four or five feet thick.

Geological Survey of Canada
ROBERT BELL M.D. Sc.D. (Harvard) LL.D. F.R.S. ACTING DIRECTOR
1903

HUDSON BAY
JAMES BAY
KEEWATIN
DISTRICT
ONTARIO
MAP
of part of
NORTHERN ONTARIO and EASTERN KEEWATIN
South West of James Bay
To illustrate Report
by
W. J. WILSON. Ph B.
Scale 16 statute miles to one inch
200' Heights in feet above sea-level
SOURCES OF INFORMATION
Astronomically checked micrometer surveys of Abitibi and Kapuskasing rivers by W. J. Wilson and H. O'Sullivan 1901, Cheepay river, by D. B. Dowling and R. H. Boyd, 1904, Moose river from Moose Factory to boundary of Algoma District, by A. P. Low, 1901 and W. J. Wilson 1902
Astronomically checked track surveys of upper Kapuskasing, Abitibi-Kenogami and Mattagami rivers by W. J. Wilson, 1902, Sleeping and Albanny rivers, by O. O. Sullivan, 1901, Kenogami river by D. B. Dowling, 1901, Trout river by W. H. Boyd, 1901, west coast of James bay by D. B. Dowling, 1901, and W. J. Wilson, and O. O. Sullivan, 1902.
Long survey of Sutton Mill lake by D. B. Dowling, 1901
Astronomically checked micrometer and track surveys of Albany, Attawapiskat, Kenogami, Missinaibi and Mattagami rivers by Dr. H. Ami, 1877-1880.
Plans of surveys of Opaschibo, Kapuskasing, Kabeshkibi, Little Abitibi, Matticotti geese and Porcupine rivers etc. by the Ontario Crown Lands Department and the Algoma Commercial Co.
Compilation by W. J. Wilson and D. B. Dowling
Cape Henrietta Maria
Akimiski Island
Albany River
Attawapiskat River
Kapiskau River
Kenogami River
Abitibi River
Opinnagan River
Patchesquonkie River
Ekwan River
Harricanaw River
Moose River
Missinaibi or Lake River
Mattagami River
Groundhog River
Pivabiska River
Sutton Mill Lake
Ekwan Point
Albany Island
Fort Albany
Moose Factory
Big Piskanish
Little Piskanish
Jarvis Island
Eastmain
Rupert
Nottaway
Broadback River
Poplar River
Beaver River
Lonely River
Pekwaka River
Big Wilson River
Kabeshkibi River
Little Abitibi River
Kapuskasing River
Opasatika River
Kenogami River
Trout River
Kenogami Lake
Aguadauk Lake
Aguadauk River
Kenogami River
Kapiskau Lake
Kapiskau River
Attawapiskat River
Ekwan River
Harricanaw River
Moose River
Missinaibi or Lake River
Mattagami River
Groundhog River
Pivabiska River
Albany River
Opasatika

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C O'Sullivan B.A.Sc. Geographer & Chief Draughtsman
P Fiereault Draughtsman

On my way down the river I examined some of the larger branches for seven or eight miles up and found the country in no way different from that adjacent to the main stream.

THE ATIKAMEG RIVER.

Mr. O'Sullivan reports that the Atikameg river, which he surveyed for 135 miles from the forks, presents the same characters as the main stream. There is a swift current and numerous rapids, and the upper part is very crooked with many short bends. The banks are composed of bedded and boulder clays and are from ten to twenty-five feet high. The forest growth, close to the river, consists of spruce, poplar, tamarack, canoe-birch and fir. The spruce averages from six to twelve inches, with occasional trees twenty inches or more in diameter. Back five or six chains, from the river banks, the land is open swamp and muskeg, covered with small spruce and tamarack. No rock exposures were seen on the lower part of this river. The first rock in place is 100 miles from the forks and is a flat-lying, honeycombed light yellowish dolomitic limestone. Some of the cavities are partly filled with a white mineral, which on exposure to the air crumbles into powder. Some of the layers are harder and have fewer cavities. A rock of this character is seen one mile and three-quarters farther up the river. Four miles and a half above this, the soft, grayish limestone, already mentioned as occurring on the main branch, was observed. Rocks similar in character to those seen at these three places occur at intervals almost as far as the river was examined. The specimens collected show that some of the strata are much harder than those of the Kapiskau river. Where Mr. O'Sullivan turned back, the aneroid gave an approximate elevation of 375 feet.

Atikameg river.

Forest growth.

Elevation.

THE OTADAONANIS RIVER.

At high water this branch is navigable for canoes almost to its source and forms a canoe route to the Albany river, by a portage connecting its head waters with the latter.

Otadaonanis river.

It is two and half chains wide at the mouth and I was able to ascend it forty-five miles, though the water was comparatively low. Its general course is north-east and it runs close to the main river as well as to its principal branch, the Atikameg. The banks are composed of clay containing the usual boulders and shells. No rock exposures were seen, but small heaps of the reddish and grayish mottled limestone were lying on the banks as if deposited there by melting ice pans, and indicate that the rock is probably in place farther up the stream.

Clay, sand and shells.

The clays exposed along the banks of the Kapiskau and its branches show considerable variety. Near the coast an unctuous bluish-gray clay is overlaid by ordinary sandy clay. Farther up the river, typical boulder clay full of striated boulders occupies the lower part, with more or less stratified material on top. There is no sharp line of separation between them, as they seem to merge into each other. In places there are thin bands of peaty material containing plant remains. Still farther up the banks are higher and the material much more sandy and gravelly, often showing false bedding. Generally the upper layers contain marine shells with few boulders, while the lower part is decidedly bouldery. Thinly laminated limestone concretions are common, usually circular in form, but as far as examined they contain no fossils. For 125 miles up the river there is no means of estimating the exact thickness of the clay covering, but above this, where it rests upon the solid rock, it varies from ten to seventy-five feet. A section six miles above the forks gives, in descending order :—

Stratified clay.	10 feet.
Bouldery "	20 "

Bouldery clay.

The bouldery clay is very much like the overlying stratified clay in general appearance, and is of a dark slate colour, but shows no stratification and contains no fossils.

Limestone fragments, both rounded and angular, are common in the clay ; also a dark very fine grained argillaceous arkose or graywacke with spheroidal pseudo-concretions of a lighter colour, which by differential weathering are sharply outlined. The cavities thus formed vary in size from mere specks to six inches or more in diameter. In section, examined by Mr. O. E. LeRoy of this office, the pseudo-concretion is seen to consist of angular and rounded fragments of clear quartz and turbid feldspar, shreds of biotite, muscovite and brown sphene imbedded in a matrix of calcite. The centre of the area is occupied by an oval-shaped fragment of fine clay slate. No concentric structure is apparent. The main mass of the rock differs in having a clay or kaolin matrix. These boulders are the most widely distributed and probably the most numerous of all the boulders in the drift, and are found on the west coast of James bay and all the rivers examined in this vicinity. Dr. Bell states that they extend all the way south to Lake Superior and that the rock is found in place on Long island, off Cape Jones, on the East Main coast.* Besides these there are well rounded boulders of red and gray granite, gneiss, reddish conglomerate containing jasper pebbles, greenish

*Report of Progress, Geol. Surv. Can. 1886, vol. II, (New Series,) pp. 20G and 36G.

breccia containing pyrite; banded jasper, jaspilyte, several iron ores of low grade; hornblende schists; diorites, &c. Some of the jaspery iron ores are identical, as far as can be judged from hand specimens, with those collected by Dr. Bell and Mr. A. P. Low on the east coast of Hudson bay, and they also resemble very closely iron ores found in situ on Sutton Mill lake by Mr. D. B. Dowling. Iron ores prices.

The shells, etc., found in the clays of the Kapiskau river as determined by Dr. J. F. Whiteaves, are as follows:—*Saxicava rugosa*, *Macoma calcarea*, *M. Balthica*, *Cardium ciliatum*, *Mya truncata*, *M. arenaria*, *Leda buccata*, *Mytilus edulis*, *Scripes Groenlandicus* and *Balanus crenatus*. The shells of *Saxicava rugosa* are very large, one specimen measuring one and seven tenths inches in length, and three quarters of an inch in width. The first two in the above list are by far the most common and are found everywhere. No striæ were observed except on boulders as the soft rock where exposed had weathered and disintegrated. Fossils.

JAMES BAY.

The most noticable feature of the west coast of James bay is its extreme flatness. Looked at from a distance there is no distinct shore line but the water and land seem to merge into each other. A strip varying in width from one to three miles and partly covered with grass and low shrubs, extends along the coast from the Kapiskau to the Moose river, except for a few miles north and south of Cockispenny point where the shore is fairly high and dry and the trees come to the water's edge. At this point one can land with canoes almost any time, but elsewhere the water is very shallow and at low tide, bare mud flats extend out for miles. Gravelly ridges with numerous boulders are very common and form one of the serious obstacles to canoeing along the coast. Coast of James bay.

At Cockispenny point I noted the reddish-brown and grayish limestone that has been already described as occurring on the Kapiskau. Farther south at Pisquochi large masses of a light gray and dark buff limestone containing the Devonian fossils *Spirifer divaricatus* and *Streptelasmum prolificum* were observed. There seems to be little doubt that these rocks are in situ. Fossils.

THE KWATABOAHEGAN RIVER.

This river enters the Moose river by two channels separated by a triangular island. The north chanuel is the larger, but has two bad rapids. The river is broad, shallow and rapid and flows over flat-lying, Kwotaboahegan river.

fossiliferous limestone for thirty-two miles. When the water is low it is with difficulty it can be ascended, but this is much the best time to examine the rocks, as it is only at comparatively low water that the beds in situ can be seen. Near the mouth the rock is a light grayish limestone dipping S. W. $<10^{\circ}$ and containing numerous fossils. Farther up it is horizontal and of a light brownish colour. These rocks resemble very closely those on the Moose and Abitibi rivers and contain the same fauna.

Fossils

The following fossils were collected from these rocks. The Brachiopods, etc., were identified by Dr. J. F. Whiteaves and the Stromatoporoids and Corals by Mr. Lawrence M. Lambe :—

Strophcodonta concava, Hall.
Spirifer divaricatus, Hall.
Atrypa reticularis (L).
Pentamerella, sp. indet.
Modiomorpha, sp. indet.
Spathella, like *S. subelliptica*, W.
Conocardium cuneus, var. *trigonale*, Conrad.
Platyostoma, sp. indet.
Cyclonema (?), sp. indet.
Loxonema, sp. indet.
Gomphoceras beta, Hall.
Orthoceras, sp. indet.
Phacops, sp. indet.
Proctus, sp. indet.
Portions of Crinoidal Stems.
Diphyphyllum arundinaceum, Billings.
Syringopora Hisingeri, Billings.
Cyathophyllum exiguum, Billings, sp.
Cyathophyllum Halli, Milne-Edwards and Haime, sp.
Cladopora cryptodens, Billings, sp.
Actinostroma expansum, Hall and Whitfield, sp.
Favosites hemispherica, Milne-Edwards and Haime.
Phillipsastraea Verneuili, Milne-Edwards and Haime.
Syringopora nobilis, Billings.

Peat.

At sixty-five miles up there is a large quantity of a solid peaty material in the bed of the river. The mass where examined was six feet thick and it can be traced along the river for 430 feet. It is of a dark brown colour and breaks off into lumps two to three feet thick. It burned slowly in the camp fire, but left a large quantity of ash, and an examination of a specimen made by Dr. Hoffmann in this office

showed that it would be useless for fuel unless it occurs in other places much purer than the specimens examined. Thin layers of the same material are exposed in the bank intercalated with the clay for several miles up the river, but everywhere they were impure.

As stated above, this river was examined for a distance of ninety miles, and from Indian sketches and descriptions, I infer it continues westward forty or fifty miles farther, though where I turned back it was with difficulty it would be navigated with a light canoe. Rapids are common along its whole course and it was necessary to make three short portages to pass the large ones. These rapids could have been poled up if the water had been sufficiently deep.

Character of the country.

The land along the whole course is low and swampy, and as on other rivers examined in this country, there is a dry ridge of a few chains width along the banks and then low swampy ground covered with small spruce and dead tamarack. The principal trees are spruce, the largest being from one to two feet in diameter and the average six to eight inches, tamarack mostly dead, poplar, balm of Gilead, fir and an occasional canoe-birch, and on the upper parts cedar is common. Willows and alders and other shrubs line the banks. Some of the spruces are tall and straight and would make good saw-logs or pulp wood, but trees of this kind are only seen close to the rivers. For the most part where the land is at all dry the trees are crowded together as closely as they can stand and this tends to stunt the growth of all. Patches of second growth ten to twenty years old occur along the river and there are areas of considerable size burned within one or two years.

Agwasuk river.

At seventy-five miles up, the canoe route leaves the river and follows a small tributary to the north called the Agwasuk. This stream is connected by a portage of a mile across the height of land to a lake which drains into the Albany river, the stream entering the Albany near the head of Big island.

THE STOOPING RIVER.

Stooping river.

In following this route from the Albany, Mr. O'Sullivan noted a light yellowish limestone two and a half miles from the mouth. The fossils in these rocks show that they belong to the Devonian system, probably Corniferous. This river for the greater part of its length forms a fairly good and easy canoe-route. It flows between clay and sand banks in places twenty feet high, with shells and boulders common to all this country. The adjacent country is reported to have been burned eighteen or twenty years ago, so that now there is a second growth of spruce averaging four to eight inches in diameter, with a

few small trees of poplar, tamarack and birch. Back from the river, the land is low and swampy and partly covered with the usual small trees. The two lakes near the source of the river lie in a flat swampy country the general elevation of which is about 275 feet above sea level. The largest, four miles long and two miles broad, is called Sand Bank lake and it is from it that the portage connects through an open swamp with the Moose waters. The stream into which the portage is made is small and very crooked and so overgrown with willows and blocked by fallen trees and old beaver dams that it was with the greatest difficulty a canoe could be got through, and for the twenty-three miles to the main river the stream is rough and difficult.

Clays and fossils.

The clays, boulders and pleistocene fossils on this river are identical with those on the Kapiskau except that the local limestone boulders are more numerous in places along the Kwatoboahegan. One mile from the mouth striæ occur on the limestone rocks, and also a mile farther up on the south side of the first long island. The course is S. 14° W. and S. 29° W. of the true meridian. There is no distinct stossing, as the limestone lies flat, but after a careful examination I have no hesitation in placing the direction as above.

Peat beds.

Reference has already been made to thick beds of peaty material on the Kwataboahegan river and thin layers of the same kind on the Kapiskau river. Similar thin layers of the same kind were also observed along the lower Abitibi river and also a thick stratum of lignitified wood. The thin layers seem to be intercalated with stratified clay while the larger masses are overlaid by a considerable thickness of bouldery clay which forms the lower part of the surface deposits along these rivers. I was not able to penetrate through the beds of peat and lignitified wood so as to see whether they rest on boulder clay or stratified material. It seems probable, however, that they are interglacial, and if so, judging from the thickness of the beds, a somewhat lengthened period must have elapsed from the retreat of the first glacier to the advance of the next. The striæ and surface deposits of the country to the south clearly point to two or more separate movements of the ice.*

Track surveys checked.

All the track surveys made were constantly checked by astronomical observations, and in the case of the Kwataboahegan river I was able to make a paced survey of much of the lower part by walking along the banks.

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*Summary Report, Geol. Surv. Can., 1901, pp. 126, 166.
Glacial and Inter-Glacial Deposits near Toronto, by A. P. Coleman. Journal of Geology, vol III ; No. 6, 1895.

The latitude and magnetic declination of the following places are :—

—	Latitude.			Magnetic declination.		
Mouth of the Kapiskau river	52°	45′	45″	12°	10′	25″
Mouth of the Atikameg river	52	29	40			
200 miles up the Kapiskau river	51	55	0	7	7	36
Fort Albany	*52	14	28	11	45	0
Cockispenny point, James bay	52	0	0			
Moose Factory (Ogilvie)	51	14	42			
Niven's line (Moose river)				11	0	0
Sand Bank lake, north end of portage	51	3	30			

*This latitude is the average of Mr. D. B. Dowling's and ours.

THE ABITIBI RIVER.

From the mouth to the Sextant rapid the Abitibi river is broad, rapid and shallow and studded with numerous islands, some of considerable size and great beauty. Islands in Abitibi river.

The banks are high in places, reaching thirty or forty feet and are composed of clay, sand and gravel and are well wooded with black and white spruce, poplar, fir, birch, balm of gilead, cedar and tamarrack with numerous shrubs. Above the Sextant rapid the river is narrower and deeper and has a fairly strong current. The banks are mostly clay, often high and almost perpendicular with hills rising behind to a height of 100 to 150 feet. Up to the Otter portage there is much swift water with some rapids. At this portage the river contracts to about one quarter its usual width and for nearly two miles flows through a winding gorge with high rocky walls. Looking down from the portage it presents a wild and picturesque appearance. A large area around this point was overrun by fire in 1901, both sides of the river. The Otter portage is 152 chains long. From this to the Long portage the river flows between well wooded high banks and is about fifteen chains wide. Numerous gravel terraces occur along this tract. From New Post up, the forest is second growth about fifteen years old.

The roughest part of the river begins at the foot of Long portage, above which is the belt of eruptive rocks already referred to, and continues for nearly eight miles in a series of rapids. The Long portage is 141 chains in length and has a bad hill at the north end. Across a small bay a very swift rapid is passed by the Oil Can portage, then follow Birch Bark, Clay Falls, Rocky and Lobstick portages. Birch Bark is thirty chains, and Lobstick thirty-three and a half long, Long portage.

but all the others are short. Above these rapids the river bends to the east for nearly two miles, then its course is almost south. At the last bend there is a trail which connects with six small lakes and joins the river between the Oil Can and Long portages. This route necessitates making seven portages aggregating five miles, but when the water is high the river is too dangerous for small canoes and the latter route has to be used. From this point south to Niven's base line, 1900, just below Island portage, the current is moderate and the clay and gravel banks are lined with terraces. There are rounded hills, rising to a height of 150 feet or more above the river level, and covered with small poplar, canoe-birch, spruce, fir, cedar and dead tamarack, but for five or six miles below Island portage, black spruce is the prevailing tree. Island portage is on a small island and is required to pass a rough rapid, and just south of the island there is another short portage on the west side. The rapids here, however, can be run, or poled up by ordinary canoes when the water is not too high. Numerous islands occur up to the Three Carrying Place portage and the current is rather strong. At this place there are two swift rapids with a fall of fifteen feet or more. These are passed by two short easy portages on the west side, or one rather long and difficult one on the west bank. In going up the river to the Frederick House branch two fair-sized streams are passed, Singed Martin creek and Driftwood creek. Just below the mouth of the Frederick House river a section of the main river was made, September 22, which showed that at this point it has a volume of approximately 401,000 cubic feet per minute. The width here is thirteen chains and the greatest depth seventeen feet, but the current is slow.

Section made of river north near mouth of Frederick House river.

In ascending, the river turns abruptly to the east and continues in that direction for ten miles and a half. Kettle Falls portage is on the south bank and about two miles from, the bend. Another short portage is necessary to overcome a swift rapid about midway on this stretch and for the greater part of the way to where the river turns south the current is swift and strong.

At the bend to the south, Jaw-bone creek enters, and the river from this point to the crossing of Niven's line is about ten chains wide and flows with a moderate current. This point connects with the micrometer survey made by me last summer up to Speight's trial line below the Iroquois falls.

On our way up the river we made a section between the Couchiching falls and Lake Abitibi which gave the approximate volume of the water at this point 306,000 cubic feet per minute. The width of

Clay Banks on Kwataboahegan River, about 70 Miles from Moose River.

Kwataboahegan River just below the mouth of the Agwasuk Branch, 1902.

the river here is six chains and the greatest depth forty-two feet, with a slow current.

Geology of the Abitibi River.

The lower part of the Moose river flows over Devonian limestones, and the same is probably true of the Abitibi up to the Sextant rapids, a distance of seventy-two miles from the mouth.

At the mouth of the Abitibi there is a rapid, passed by a portage on the west bank. The fall is about eighteen feet over ledges of a buff coloured limestone weathering white and dipping slightly to the south-west. This rock is seen in places for five or six miles, but contains no fossils as far as examined. For the next fifty miles no rock exposures are seen, but there are deep cut banks of clay containing marine fossil shells and in the lower part many boulders. The banks are well wooded and much of the soil along the river is of excellent quality, being for the most part a rich sandy loam.

Big Cedar creek.

Opposite Big Cedar creek, in the west bank there are seams of impure peaty material two to three feet thick intercalated with the clay. These beds are overlaid by ten to fifteen feet of clay, in part stratified, and they are exposed at intervals for a considerable distance. Forty miles from the mouth of the river, at what is called Blacksmith rapid, there is an outcrop of lignite or lignitified wood. On the east bank we sank a hole into it to a depth of nearly five feet, when we got below the level of the river and water coming in prevented us reaching the bottom of the seam. Much of the material taken out was loose and comparatively fine and coaly, but some of it was woody and firm and showed the vegetable structure clearly. Fine seams of sand were occasionally met with in digging into the mass, but these were less than an inch thick. Many specimens of plant remains were found but they have not yet been identified. Some of the specimens collected have broken up on exposure to the air and show a bright shiny surface. About ten feet of bouldery clay overlies and covers up the bed on the sloping bank and makes it difficult to trace it for any great distance, especially in the absence of any proper instruments to dig with. The Indian guide reported that thin seams of this coaly material occur on the Kisagami river (West river, of the Northern Ontario map, 1900) below the large bend where the first portage is made. Similar exposures have been described on the Missinaibi river and its branches to the west by Dr. Bell and others.* This material

Lignite possibly of economic importance.

* Report of Progress, Geol. Surv. Can., 1875-76, pp. 326-327, and 1877-78, pp. 4-56. Report on the Basin of Moose river and adjacent country, by E. B. Barron, 1890.

may be of considerable economic importance as it evidently spreads over a wide area and if it can be found in large enough quantities would be a useful fuel for local purposes. In proceeding up the river thin bands of impure peat are occasionally seen close to the water level for the next fifteen miles.

Sulphur spring

Fifty-five miles up an exposure of gray shale dipping S. 30° E. < 10° outcrops on the west bank. The topmost layers are very fissile and soft, while at the level of the water they are thicker and slightly firmer, but still soft. This is near the foot of the Long rapids, and other exposures of a similar kind are seen farther up for over three miles. A sulphur spring is situated on the west bank about a mile and a half above the first outcrop of shale and is covered at ordinary high water. Outcrops of a grayish, fossiliferous limestone are met with in the upper part of the long rapids associated with layers containing cavities partly filled with calcite crystals, and others of fine grained, evenly-banded strata. For six miles below the second portage on the river there are no rock exposures, but high clay banks. The rapid causing this portage falls about six feet and runs through a mass of porous, granular, dark-brownish limestone weathering white and holding fossil corals. The cliffs on either side are twenty feet high. On account of the abundance of the corals in the rocks at this point I propose to call it Coral rapid. Between this portage and the Sextant rapid the limestone is from yellowish to reddish-brown in colour and full of fossils, especially corals. Just below the Sextant rapid there is a high cliff on the east side of alternate hard and soft bands mostly of a grayish limestone, but containing in the lower beds the reddish-brown clayey limestone similar to that found on the Kapiskau river and at Cockispenny point on James bay. Some of the uppermost layers contain fossils.

Fossils identified.

From the fossils collected along this river Dr. Whiteaves and Mr. Lambe have identified the following species, all indicating a Middle Devonian horizon :—

Cyrtina, sp. indet.
Atrypa reticularis (L).
Paracyclas elliptica, Hall.
Cyathophyllum Halli, (Milne-Edwards and Haime.)
Streptelasma prolifica, (Billings.)
Phillipsastræa Verneuili, Milne-Edwards and Haime.
Stromatopora tuberculata? Nicholson.
Stromatopora, sp. Cfr. *Stromatopora Hupschii* (Bargatsky.)
Favosites turbinata, Billings.

Favosites basaltica, (Goldfuss.)
Favosites cervicornis, Milne-Edwards and Haime.

Petrographical descriptions.

At the south end of the Sextant portage there is a layer of sandstone underlain by several feet of conglomerate, and below this, masses of a dark augite rock forming the bed of the river. Across the river on the west bank at water level there are thinly laminated gray shales containing fossil plants. Above the shales and lying conformably there are beds of conglomerate, and on top of this seemingly bedded eruptive rocks similar to those on the east bank. The petrographical descriptions which follow are by Mr. O. E. LeRoy of this office. Of specimens from both sides of the river at the above point, he says: 'The hand-specimens represent a very dark almost black augite lamprophyre of a type closely allied to the monchiquites. The section consists of aggregates of calcite and serpentine as pseudomorphs after olivine, and pale brown and pink idiomorphic augites in a ground mass of augite, shreds of biotite, calcite, chlorite, magnetite and a fibrous zeolite.'

Strata cut by probable dyke.

At the north end of the rapid what looks like a dyke cuts diagonally through the strata from top to bottom, but I did not make a close examination.

About a mile south of this portage on two small islands the first Laurentian rocks are seen, where there is an exposure of reddish granitoid gneiss. The same rock outcrops at the north end of the Otter portage much disturbed and broken and intersected by pegmatite veins. This portage leads across exposures of micaceous rusty gneiss near the north end where the foliation is distinct and the strike east and west. At the south end there is a garnetiferous gneiss dipping N. 60° E. < 45 cut by dioritic dykes one to four inches wide. Several exposures of granite and gneiss striking in a general way east and west are seen along the river up to two miles from the Long portage. Here the rock is a 'pink and light gray pegmatite, consisting mainly of feldspar with subordinate quartz and biotite. The section shows an alltriomorphic structure, the feldspar (orthoclase, microcline, oligoclase) occurring in large irregular individuals with smaller grains occupying the interstices. The quartz occurs in definite areas. Limited alteration has gone on in the plagioclase, producing calcite, epidote, and zoisite, while the biotite is almost completely altered to carbonates and limonite.' At the north end of the Long portage the character of the rock changes. It is felsitic and much broken and shows irregular lines running north and south. A short distance south at the Oil Can portage the rock is an olivine hypersthene gabbro, dipping N. 45° E. < 75. 'It is a dark, rather fine-grained type, composed of black

Rocks at north of Long portage.

pyroxene and rusty feldspar, the whole having a rudely foliated structure. Microscopically the rock is composed of diallage, hypersthene, olivine, plagioclase, with accessory magnetite, pyrite and apatite and secondary serpentine. The minerals occur in polygonal and rounded forms with smooth borders. Pale gray diallage with the usual microstructure is the dominant pyroxene. The hypersthene is pleochroic in tones ranging from rose red to a faint green : the olivine is colourless and is more or less altered to serpentine. The feldspar is probably labradorite ; it is twinned according to the albite law with additional pericline in some cases. With crossed nicols evidence of strain is apparent from the undulatory extinction, and the bent and broken twin lamellæ. The structure is that of the eruptives usually classified as Laurentian.' From the Oil Can portage to Rocky portage the rock is coarser, but a representative specimen taken two and a half miles from the last shows that the rock is an olivine gabbro. The structure is similar to that of the specimen just described but the mineral content differs in that hypersthene is absent while biotite is present. The iron ore is ilmenite with a border of leucoxene.

Rocky portage.

At the Rocky portage there is an outcrop of well foliated rusty gneissic rock striking N. 80° W. At the south end the dip is N. $< 75^{\circ}$ with coarse pegmatite veins cutting the strike. These rocks continue up to the Lobstick portage where a garnetiferous biotite syenite rock appears. 'This is a fine grained rather basic dark red rock, holding a very large amount of garnet in grains and rhombic dodecahedra. The garnet is much cracked, and perfectly isotropic ; it holds inclusions of feldspar and biotite in a poikilitic manner. The feldspar is a finely twinned plagioclase, in all probability albite. Biotite in irregular plates and idiomophic forms with skeleton structure occupies spaces between the feldspar and garnet. A few grains of apatite and zircon complete the section. The rock from its association may possibly be referred to the Grenville series.'

A short distance above the portage, gneissic rocks again outcrop, and on an island a mile and a half distant near where the river turns south the dip is N. $< 75^{\circ}$. No rock exposures were seen along the river for the next seventeen or eighteen miles, the first appearing a little more than half a mile below Niven's base line north of Island portage. Here the rock is a 'biotite granite or granitite, coarse grained, and made up of gray and pink feldspar, black mica and hornblende, and quartz. Under the microscope the feldspar occurs as albite, orthoclase and microcline, the former predominating. Associated with the biotite is a little pale green hornblende which includes the magnetite. Quartz, apatite, zircon and muscovite complete the

section." On Island portage there is a slickensided rock which under the microscope proved to be a sheared portion of the above, the 'section showing a granulation and alteration of the minerals with attendant development of kaolin, chlorite and calcite.' Adjacent to this rock are masses of gneiss dipping S. E. < 50°, but they are very much disturbed and broken up. One or two exposures of this slickensided rock are seen in the next two miles with intervening outcrop of gneiss and granite, which are the principal rocks in the river up to Niven's meridian line of 1898. At the Three Carrying Place portages on the east bank the foliation of the gneiss is very distinct; the dip is S. 70° E. < 50° and on the second portage ascending the river it is N. 80° E. < 32°. At this point there are bands of almost pure quartz. One mile and a half below the mouth of the Frederick House river on the east bank there is a reddish massive granite, chiefly quartz and feldspar. At Kettle falls the gneiss is composed of alternating bands of red and gray feldspar, quartz, mica and hornblende. The dip is S. 40° E. < 35°. A hand specimen taken at this point is a 'granitite gneiss, well foliated, light gray in colour and is one of the most acid types. The microscope shows the feldspar to be present both as orthoclase and plagioclase (albite), which occur in irregular individuals with a somewhat interlocking habit. Strain shadows prevail both in the quartz and feldspar. The biotite is in part idiomorphic, and includes or is associated with zircon, apatite, epidote and calcite.' Island portage.

Two and a half miles east of Kettle falls there are numerous bands of white quartz exposed in the gneiss. One measured two and a half feet in thickness. Most of the rocks from the Lobstick portage up stream are of a decidedly acid type, but there are bands of the more basic, usually in the form of amphibolite. One of the latter is seen just below the crossing of Niven's line, where the survey ended. Kettle falls.

The glacial phenomena of the Abitibi river up to the Sextant rapid- resemble closely those on the other rivers described. Above this rapid, through the Archæn rocks, the river has a distinct valley, with many sand and gravel terraces along its banks, sometimes rising one above another. These are well seen between the Otter and Long port ages where, besides low terraces near the water, usually of small area, there is one at 40 feet and another at 100 feet above the present river level. Almost as soon as the older rocks are reached signs of glaciation appear, with the stossing invariably on the north side. The general course of the striæ along the river is south, but exposures vary from S. 10° E. to S. 30° W., true meridian. On the trail, coming out above the Long portage, there is a steep ridge or "horseback" a quarter Glacial phenomena.

of a mile long, running N. 20° W., and a low ridge of the same character is crossed near the north end of the Long portage.

Extent of Middle Devonian.

The examination of the rocks on the rivers explored shows that the Middle Devonian system extends from the mouth of the Kwataboahegan river, south to a short distance above the Sextant rapid, and north probably along James bay to the Kapiskau river, and westward for a considerable distance. On the Abitibi river, from the Sextant rapid to the Long portage, the rocks belong to the Laurentian system. Then for a distance of about 8 miles the rocks, in general appearance, resemble the Huronian, but the microscopical examination of the hand specimens points to their possibly belonging to the Grenville series. South of this narrow band the formation is Laurentian, and continues the same up the river beyond the southern boundary of the map, or to within a short distance of the Iroquois falls.

CLIMATE AND GAME.

Climate.

During the months of July and August while working on the Kapiskau and Kwtaboahegan rivers the weather was usually fine with warm days and cool nights. The temperature in the early morning averaged about 50 degrees and in the middle of the day 70 to 80 degrees. Thunderstorms preceded by violent gales were rather frequent. Vegetation along the rivers was very rapid and luxuriant.

Game and fur bearing animals.

Game was not plentiful on the Kapiskau and Kwataboahegan rivers, the few Indians who were there, living wholly on fish and rabbits. The only animals we saw in this district were two bears, three deer, a lynx, and two otters, although the Indians hunt beaver, fox, marten, mink, muskrat and weasel. A few ruffed grouse and an occasional flock of ducks and geese were seen, and the tracks of one or two moose. The Indians report that this animal is steadily moving farther north. Pike, pickerel and whitefish are found in the rivers in limited quantity and the last is caught in the bay along the coast. Sturgeon are caught in the Abitibi river, two of which I saw near Singed Martin creek.

Acknowledgements due.

Mr. Owen O'Sullivan, who accompanied me as assistant, did his work in a most satisfactory manner. I am indebted to him for material assistance in making astronomical observations with the transit, and for a number of photographs, illustrative of the geology and scenery of the country examined, as well as for aid in the general management of the work.

My thanks are due Messrs. Robert Skene, David Armit and other officers of the Hudson's Bay Company for valuable assistance; to the

Rt. Rev. J. A. Newnham, Bishop of Moosonee, for personal kindness and to the Rev. F. Swindlehurst for photographs of the waterfalls on the Missinaibi river, etc.

The following insects were collected chiefly on James bay and the Kapiskau river in July and August, and were identified by Dr. James Fletcher of the Central Experimental Farm.

COLEOPTERA.

Carabus Maeander, Fisch.
Pterostichus orinomum, Leach.
Adalia frigida, Schn.
Lina lapponica, L.
Lina scripta, Fab.
Monohammus scutellatus, Say.
Pissodes strobi, Peck.

LEPIDOPTERA.

Grapta j-album Bd.-Lec.
Lycæna lucia, Kirby.
Pieris oleracea-hiemalis, Harr.
Sphinx gordius, Cram.
Cosmia paleacea, Esp.
Triphosa dubitata, L.

ODONATA.

Aeschna verticalis, Hagen.
Diplax hudsonica, Selys.
Calopteryx Virginica, Drury.

List of plants collected by W. J. Wilson along the shore of James bay and in the valley of the Kapiscan river.

By John Macoun.

Botanical specimens.

The species included in the first column are those collected along the shore of James bay between the mouth of the Moose river and the mouth of the Kapiscau. The second column includes the species collected along the Kapiscau river.

Anemone nemorosa, L.		+
Anemone multifida, DC.	+	+
Anemone Canadensis, L.	+	+
Anemone parviflora, Mx		+
Thalictrum dioicum, L.		+

Ranunculus septentrionalis, Poir		+
Caltha palustris, L	+	
Actæa rubra, Willd	+	+
Arabis hirsuta, Scop		+
Erysimum cheiranthoides, L		+
Sisymbrium humile, Meyer		+
Draba incana, L	+	+
Viola cucullata, Ait		+
Stellaria borealis, Bigel	+	
Alsine humifusa (Rottb.)	+	
Arenaria peploides, L	+	
Astragalus alpinus, L		+
Lathyrus maritimus, Bigel	+	
Lathyrus palustris, L	+	
Vicia Americana, Muhl		+
Prunus Virginiana, L		+
Neillia opulifolia, Benth & Hook		+
Rubus triflorus, Richards		+
Rubus arcticus var. *grandiflorus*, Ledeb		+
Fragaria Virginiana, Duchesne	+	+
Potentilla anserina, L	+	+
Potentilla palustris, Scop	+	
Rosa acicularis, Lindl		+
Amelanchier Canadensis, T. & G		+
Mitella nuda, L		+
Parnassia parviflora, DC		+
Parnassia Kotzebuei, Cham. & Schlecht		+
Ribes sctosum, Lindl	+	
Hippuris maritima, Hellenius		+
Epilobium spicatum, Lam		+
Aralia nudicaulis, L		+
Cicuta maculata, L		+
Heracleum lanatum, Mx	+	
Cornus Canadensis, L		+
Viburnum pauciflorum, Pylaie		+
Cornus stolonifera, Ex		+
Lonicera involucrata, Banks		+
Lonicera glauca, Hill		+
Linnæa borealis, Gronov	+	+
Galium boreale, L		+
Erigeron Philadelphicus, L		+
Erigeron hyssopifolius, Mx		+
Antennaria pulcherrima (Hook)		+
Achillæa millefolium, L	+	+
Pyrethrum bipinnatum, L	+	
Artemisia vulgaris, *L.*, var. *Tilesii*, Ledeb	+	
Petasites sagittata, Gray	+	
Arnica Lowii, M. H. M		+
Senecio palustris, Hook	+	
Senecio aureus, L	+	
Senecio Balsamitæ, Muhl		+
Taraxacum alpinum (Koch)	+	
Taraxacum officinale, Weber	+	
Vaccinium Vitis-Idæa, L		+
Vaccinium Canadense, Kalm		+

Arctostaphylos Uva-ursi, Spreng	+	
Kalmia glauca, Ait		+
Pyrola rotundifolia, Mx	+	
Pyrola asarifolia, Mx		+
Pyrola chlorantha, Swartz		+
Pyrola secunda, L		+
Moneses uniflora, Gr		+
Trientalis Americana, Pursh		+
Glaux maritima, L	+	
Mertensia paniculata, Don		+
Castilleia septentrionalis, Lindl		+
Pedicularis Groenlandica, Retz		+
Rhinanthus Crista-galli, L	+	+
Pinguicula vulgaris, L		+
Brunella vulgaris, L		+
Rumex Britannicus, L	+	
Polygonum viviparum, L	+	+
Shepherdia Canadensis, Nutt	+	
Comandra livida, Rich	+	
Alnus incana, Willd	+	
Alnus viridis, DC		+
Betula glandulosa, Mx	+	
Populus balsamifera, L	+	
Salix rostrata, Rich	+	
Juniperus nana, Willd	+	
Corallorhiza innata, R. Br	+	+
Habenaria dilatata, Gray		+
Habenaria obtusata, Rich		+
Orchis rotundifolia, Pursh		+
Cypripedium acaule, Ait		+
Cypripedium pubescens, Swartz		+
Cypripedium passerinum, Rich		+
Calypso borealis, Salisb		+
Sisyrinchium angustifolium, Miller		+
Maianthemum Canadense, Desf		+
Smilacina stellata, Desf	+	+
Allium Schanoprasum, Linn		+
Lilium Philadelphicum, Linn		+
Tofieldia glutinosa, Willd		+
Triglochin maritimum, L	+	
Scirpus maritimus, Linn	+	
Carex maritima, Muller	+	
Carex lanuginosa, Michx		+
Hierochloa borealis, R. & S	+	
Calamogrostis hyperborea, Lange	+	+
Festuca ovina, Linn	+	
Hordeum jubatum, Linn	+	
Elymus mollis, Trin	+	
Elymus dasystachyon, Trin		+
Botrychium Lunaria, Swartz	+	
Botrychium Virginianum, Swartz		+

GEOLOGY OF THE BRUCE MINES DISTRICT.

Mr. E. D. Ingall.

Work done by Messrs. Ingall and Denis.

At the beginning of June, field work was begun in the Bruce Mines District, Algoma, Ontario. Mr. Theo. Denis accompanied Mr. E. D. Ingall, who had charge of making a study and a detailed map of an area some twenty miles square, embracing a district which is important from an economic standpoint, on account of the attention now being given to its copper deposits, and also from the presence of iron ore. The area comprises the townships of Plummer, Johnson, Tarbutt, Laird, McDonald, Meredith, Aberdeen, Kehoe, McMahon, Chesley add and a portion of the Garden River Indian reserve. The object was to study, as far as conditions allowed, the relation of the mineral deposits to the inclosing rocks and their modes of occurrence; also to verify and correct the geological mapping as given in the atlas accompanying the Geology of Canada of 1863. Mr. E. D. Ingall undertook the careful study of limited mineralized areas, investigating their lithology, the manner of deposition and the exploitation of their mineral deposits in detail, and to Mr. Denis was assigned the work of the mapping of the general distribution of the rocks of the district and the topography required for the construction of a map. As there were no maps of the district available, on a convenient scale, the greater part of the season was devoted to topographical work. All the roads were surveyed with micrometer and railroad compass, some 250 miles being covered. The rock-exposures along these roads were also located, thus affording a good skeleton of the geology, which however, requires additional work to fill in the gaps before completing the map. Towards the end of the season, Mr. Denis joined Mr. Ingall and assisted in carrying out the investigations at the several points which had been chosen for detailed geological work.

The district under consideration, forms part of the typical Huronian area, studied and mapped out by Alex. Murray in the early days of the Geological Survey of Canada. The map, on a scale of eight miles to the inch, in the atlas which accompanies the Geology of Canada, 1863, gives a good idea of the general distribution of the rocks; but as the material for the construction of the map was gathered at a time when the country was bush-covered and travelling through it difficult, it can be easily understood that the geological lines require correction in places, in the light of later observations carried out under more favourable conditions.

General geology.

The sequence of the rocks of the Huronian series, as observed by Murray, together with his descriptions, will be found in the Geology of

Canada, 1863, but since then, some of the members of the series have been the object of more thorough investigation. One of the prominent features of the formation is the 'slate conglomerate,' which has been divided in the Geology of Canada into two members, the lower and the upper. The aggregate thickness of this rock has been estimated by Murray to be over 4,000 feet. It is similar to the 'breccia conglomerate' of the Temiskaming region, which has been the subject of thorough investigation by Dr. Barlow of this department. This is well described in his report on the Temiskaming region. (Ann. Rep. of the Geol. Surv. vol. X. pt. I.) Dr. Barlow believes it to have had a pyroclastic origin. The following is an abstract of his description. 'The rock is composed of a groundmass or matrix in which are embedded pebbles and fragments of biotite granite or granitite, hornblende granite, diabase, diorite, &c. These vary greatly in size from small grains to boulders of fifteen inches in diameter and even larger. They are very unevenly distributed throughout the groundmass, sometimes in aggregates, the individuals being very close together, whereas in other places they are very sparsely disseminated, leaving between them wide interspaces of the groundmass. The granitite fragments are by far the most abundant. This material is usually of a pink colour and coarse in texture. A thin section prepared from one of the pebbles shows the rock to be greatly decomposed and to consist of orthoclase, which predominates, with plagioclase and microcline. The feldspar is much decomposed, consequently turbid and filled with sericite, epidote and calcite; the bi-silicates are almost entirely altered to chlorite. The quartz is of the ordinary granitic variety; it has a somewhat wavy extinction, but does not show other proofs of having undergone great strain. Hornblende and biotite were probably originally present but have been totally altered to chlorite.'

Slate conglomerate.

The other rocks represented by pebbles in the groundmass have also been studied; the diabase fragments are fine-grained and show much decomposition. There are also present fragments of greatly crushed and stretched felspathic quartzite.

The matrix or groundmass in which these pebbles and fragments are embedded was found by Dr. Barlow to consist mainly of granitic debris, the fragments as a rule being simple minerals with angular or irregular outlines, indicating that they were not subjected to the trituration usually shown by constituents of ordinary clastic rocks. The minerals represented. as a rule, are orthoclase, plagioclase, microcline, with chlorite, sericite, epidote and zoisite, as well as magnetite, ilmenite and pyrite; quartz is also present, frequently showing pronounced uneven extinction.

Quartzites.

This breccia conglomerate is underlain by a series of quartzites, felspathic in character, the textures of which vary considerably from very fine grained, in places vitreous quartzites, to coarse grained, almost conglomeratic in appearance. Overlying the breccia conglomerate is another group of quartzites, the lower members of which are also felspatic. This arkose character gradually disappears and the upper members are vitreous non-felspathic quartzites ranging in colour from dark purple to perfectly white, containing in one case the red jasper pebbles which give rise to the red jasper conglomerate.

This series of quartzites overlying the breccia conglomerate has been divided into several individual members by Murray, who has mapped out their distribution with sharp boundaries. These contacts in the field, wherever observed last summer, were however not found to be very well defined, but seem to be more of the nature of a merging of the rocks into one another, the character of the strata changing gradually.

Igneous rocks.

The district is traversed by belts of igneous rocks which differ greatly in importance, varying from quite small areas to others many square miles in extent. The different areas vary considerably also both in mineral constitution and texture. They are mentioned in the 'Geology of Canada,' but are not defined on the map of the Huronian region which accompanies it. As the mineral deposits of the district seem to be largely connected with these rocks, it would be important to delimit them and study them more closely than could be done in the general examination made of the district. As a beginning towards this, some forty thin sections of specimens collected last summer are being made and will be examined as soon as they arrive.

These igneous rocks are referred to in the Geology of Canada as overflows. Although the definite conclusion as to their being so or not cannot be arrived at without more field investigation, yet the evidence gathered so far would certainly in most cases assign to them an intrusive rather than an overflow character.

Ores.

The region has received attention chiefly on account of occurrences of copper ores, although some properties have been prospected for iron ores. The copper occurs in the form of sulphides, the common ore being chalcopyrite. Bornite occurs intermixed with the chalcopyrite in the ore, especially in the surface zone.

Within the area examined, the points at which most work has been done and which were therefore selected for especial studies of the mode of occurrence of the copper ores were The Bruce, Wellington and

Huron Copper Bay, the Rock Lake, the Cameron and the Richardson mines. Besides these, a number of other properties were examined where only surface prospecting had been done.

Bruce and Wellington mines.

By far the most extensive developments made are those of the mines in the vicinity of Bruce Mines on the shore of Lake Huron, about thirty-five miles east of Sault Ste. Marie, Ontario.

Although these mines were recently reopened, their history dates back over half a century, work having been commenced in 1846. The mines are situated on a group of veins whose outcroppings, showing first on the shore at a point about a mile east of the dock at Bruce Mines, have been traced for over a mile and a half in a general northwesterly direction to the limit of the workings of the Huron Copper Bay mine.

The veins are unquestionably fissures in an extensive area of 'greenstone.' The final decision as to the exact nature of this igneous mass and its relationship to the surrounding sedimentaries is a matter requiring further work in the field and microscopic examinations of the rock specimens brought in. However, as the result of a preliminary examination of a couple of thin sections by Dr. A. E. Barlow, petrographer to the department, the rock would appear to be uralite diabase. A number of dykes of a more compact diabase cut both the general mass of the older rock and the series of veins.

The area of diabase above mentioned shows a width in a northerly and southerly line of about a mile from the shore line to where the sedimentary rocks of the series first appear. No boundaries were located to its extension east and west, as it passed outside of the area under study. The large islands closing in the mouth of Bruce Mines bay are also 'greenstone,' but the shores of the western end of the bay being drift covered it could not be determined whether or not they connect with the main area of the mainland to the north. There seems to be a possibility that a belt of quartzite may intervene which has determined the erosion of the hollow now forming the bay.

Islands of greenstone.

On the northern side this greenstone is followed by quartzite with which is associated a thin bed of impure limestone. Near the westerly workings of the Huron Copper Bay mine this limestone bed seems to be cut off abruptly by the greenstone, although the actual contact must be in the low ground intervening between the exposed surfaces of the two rocks. The limestone can be traced pretty continuously in an easterly direction to the edge of the area examined.

Only at one place however is the actual contact exposed, a wide stretch of drift intervening as a rule. At the point above mentioned the contact seems to be distinctly an intrusive one, tongues of the greenstone cutting the limestone. Much more precise exploration would be required however to decide whether these represented tongues of a dyke cutting both rocks, and younger than both or whether thereby the intrusive nature of the whole mass is to be considered proved. Passing easterly from this point, which is near the road between the village and the Canadian Pacific Railway station, it is found that a comparatively thin bed of red and dark brown quartzites intervenes between the greenstone and the limestone, the latter showing as a little ridge. Between this ridge and the rock exposures of slate conglomerate along the railroad, about half a mile to the north, the section is practically all drift-covered in the vicinity of the road. Search would have to be made therefore in the bush-covered lands east and west of this point for more continuous exposures in order to work out the actual succession of the sedimentaries lying to the north of the igneous area in which the mines lie.

Without attempting to settle these yet outstanding questions the main features of the economic deposits at this point may be summed up as presenting a series of large fissure veins cutting an extensive mass of 'greenstone,' the latter being bounded on the south by the waters of Lake Huron and on the north by the quartzites, limestone and slate conglomerates of the Huronian series.

In an easterly direction the southern limit of the greenstone is shown toward the bottom of the eastern lobe of Bruce Mines bay, where the white quartzite of Murray's map comes in. The quartzite is continuous along the eastern shore of the Bay, where, however, it is seen to be cut by numerous basic dykes.

The sedimentaries of the series are seen everywhere in the vicinity of this group of mines to dip at low angles toward the north. Along the shore of Lake Huron, however, westerly from Bruce Mines bay, the dip is southerly, exhibiting thus the other side of the anticlinal fold described and mapped by Murray.

Nature of veins worked.

The veins worked in this group of mines consist, as previously stated, of fissures. They carry the copper in the form of different sulphides, chiefly chalcopyrite, in a gangue of quartz. At places the gangue is partly dolomitic, but the former mineral is very largely predominant as evidenced by the material of the waste piles around the workings. Near their outcrops, the veins are said to have carried a higher percentage

of copper than below, owing to the presence of bornite and other rich sulphides of the metal. The presence of these minerals is probably due, as would elsewhere appear, to secondary enrichment.

Old mines described.

A preliminary examination of the lower levels of the Wellington and Huron Copper Bay workings showed chalcopyrite with some pyrite disseminated through a gangue of white quartz. In the Wellington and Huron Copper Bay mines, the veins have been worked out to great widths, excavations often reaching widths of 25 to 30 feet. Of course there are many places where the veins narrowed down to not more than four feet in thickness, but ten feet might perhaps be accepted as an average of the thickness all the way through. At the old Bruce mine the veins are seen to be narrower and in the main workings would not average possibly more than five feet.

The total length attained in the Bruce workings would measure about 2,000 feet, whilst the combined length of the Wellington and Huron Copper Bay mines would measure nearly 2,500 feet. The workings at the Bruce attained depths of 250 to over 300 feet and at the Wellington the average of the depth attained in the workings would be about the same although Bray's shaft was put down to about 1,060 feet. The area of the veins stoped out, as shown on the old plans, would measure approximately as follows, viz. :—At the Bruce Mine about 225,000 square feet which, assuming a depth of 300 feet for the mine, would represent a length of, say 750 feet of vein excavated. At the Wellington, etc., a total measurement is shown of about 600,000 square feet, which would represent for a depth of say 300 feet, an equivalent in length of 2,000 feet. In both cases, it must be born in mind that these represent workings on two main veins close together and parallel to each other as worked in these two mines. In the Wellington &c., mines, these were known as the New Lode and Fire Lode. They paralleled each other for about 1,300 feet, but joined together to form a single vein at the east and western ends of the workings.

The westerly part of the Bruce workings are situated on the main lode and its branches for about 1,300 feet, whilst east of this, for about 600 feet, the chief excavations are on two veins, known as the Trial and Dodge veins. A good deal of prospecting work was done on minor veins and branches in the vicinity of these two chief mines, and also in veins which outcrop in the 4,000 feet of distance intervening between the Bruce and Wellington workings, but much more development will need to be done before the question as to the practical continuity of the series of fissures and their profitable nature can be

settled. An excavation called Taylor's shaft, from which it was said some test drifts were run, was sunk about midway of the distance between the two mines, but no details are available as to the results attained. The particulars given above refer to the work done during the first period of the history of these mines by the West Canada Copper Company and its predecessors. This period ended with the final cessation of work in 1876. When this company was working at its strongest it employed as many as 380 men, and for the period of years from 1858 to 1875 produced about 37,378 long tons of concentrates having a total content of nearly 7,500 long tons of copper, valued at over $2,900,000. The average price received for the copper during this whole period of eighteen years would thus be somewhat over 17 cents per pound. Since 1858, however, the price of this metal has fallen off considerably. In that year the company obtained an average of 21 cents per pound for its copper, whereas the figures for 1875 show an average value for their product of less than 16 cents per pound. When the present company bought the mines a few years ago it reopened them and some further work was done, of which, however, we have as yet no complete data. At present nothing is being done other than to keep the plant and mines in order. In connection with the operations of the present company, the mines have been fully re-equipped with modern machinery for mining and ore-dressing, the mill having a capacity of 400 tons per day. As it is intended to give full particulars of this important group of mines in the complete report to follow later, nothing further need be stated here.

West Canada Copper Co'y.

The final failure of the first attempt to work these mines seems to have been due to a variety of causes, many of which have ceased to be operative with the progress of opening up of the district, and it becomes a question as to whether successful work could not again be carried on with careful management and the improved plant and methods available.

Rock Lake mine.

The Rock Lake mine is situated some fourteen miles north of Bruce Mines village. It is equipped with a complete mining plant, including hoists, air compressor, drills, etc., and with a mill with a capacity of 100 to 125 tons per 24 hours. The latter is situated on the shore of Rock lake, nearly two miles west from the main shaft with which it is connected by a tramway. Transportation is afforded from the mill by the Bruce Mines and Algoma Railroad, which connects with the Canadian Pacific Railway at Bruce Mines station, with an extension to the lake shore at Bruce Mines village.

The ore consists of chalcopyrite with some bornite, &c., in a gangue consisting mostly of white quartz with which is intermixed at places

a good deal of aukerite, the ochreous decomposition product of the latter constituting a marked feature of the outcroppings at places. The developments made are situated along what appears to be a shattered zone at the contact of the red quartzite and the 'upper slate conglomerate' of Murray. The quartzite proper extends for a width across the strike of about a mile southerly, and the 'slate conglomerate,' etc., about an equal distance northerly. The workings are situated along a narrow subsidiary valley about half way up and running lengthwise of the hills of slate conglomerate flanked with quartzite which rise to a height of some 400 or 500 feet above the level of Rock Lake. In the vicinity of the mine buildings and main workings the width of the zone of shattered quartzite exposed is from 500 to 700 feet. Passing northward, this is followed by a belt of green schistose rock, showing a width of outcrop of about 400 feet. For about 400 feet further there are no rock exposures until the foot of the northern ridge is reached, where the typical 'slate conglomerate' emerges abruptly from beneath the cover. This belt exhibits the characteristic features elsewhere found of well rounded pink boulders and pebbles of granitic rock, &c., scattered throughout a dark greenish-grey matrix of slaty appearance. Rock Lake mine.

The veins worked in the main shaft and connected workings are in the schistose belt. Other less extensive workings to the south of these are in veins in the shattered quartzite zone. It seems probable that the schistose belt above mentioned represents merely a portion of the 'slate conglomerate' in which schistosity has been developed by the disturbing force that at the same time produced the series of veins and shattered the adjacent quartzite.

The general dip of the formation is southerly about 25° although near the mill there is evidence of a somewhat steeper dip in the flanking quartzite, followed in ascending the hill northward by a flat anticlinal and synclinal fold before reaching the main ridge of slate conglomerate.

A comparatively small dyke of greenstone, measuring from 100 to 150 feet in width runs with a general north-westerly strike roughly parallel with the general trend of the veins. It lies about 100 feet to the south of the main shaft, and at the west end passes close to the north side of the mill. The developments made up to October, 1902, consisted of the main shaft and workings together with a considerable amount of surface development for a distance of some 1,500 feet east and a number of test pits, &c., along the same general direction westerly for about a mile and a-half. At the most of these points ore has been

exposed showing chalcopyrite disseminated through a quartz or quartz and ankerite gangue. Of the relationships of the veins to those worked in the main shaft, nothing could be definitely stated without still further detailed mapping and study, owing to the disturbed condition of the formation previously alluded to.

The main shaft, which is practically vertical, at the date of the last visit made had attained a depth of 400 feet. From it, levels had been driven east and west at depths of 100 feet and 200 feet, testing the vein for a length of nearly 600 feet. At the bottom of the shaft a small crosscut to the south reached the main vein at about 35 feet, which had been followed west in a drift for about 30 feet. The ore mined was being taken from above the second level, the stopes exhibiting a width of about 20 feet.

Apart from the small dyke already mentioned, the only intrusive rocks anywhere in the vicinity are represented by two considerable ranges of greenstone traversing the sedimentaries at distances of half a mile north and south of the mine respectively and with a general trend parallel to that of the formation.

Cameron mine.

About two and a half miles north-east from Desbarats station on the Canadian Pacific Railway (Algoma branch) is the mine known as the Cameron or Stobie. At this place a fissure vein is seen cutting a ridge of red quartzite. On this vein a shaft has been sunk some 150 feet in depth from which, at 100 feet down, have been run drifts east and west totalling in length about 150 feet. The outcropping of the vein to the east of the shaft is not visible, being covered, but it has been stripped west of the shaft for a distance of 150 feet, where it runs under the deep soil of the adjacent farming land of the valley. Seventeen hundred feet further west on the rocky ridges opposite the mine, small surface workings have also shown the existence of ore. These are roughly on the strike of the Cameron mine vein, but whether they are to be taken as representing its actual extension or not is doubtful. The outcroppings near the shaft show a composite vein of about four feet in width, the ore being chalcopyrite in a gangue of white quartz. Some specimens show plainly surface change of the chalcopyrite to bornite. The vein in the workings shows a dip of 75° to the south and a width at places of about 12 feet made up of subordinate branches with 'horses' of quartzite.

Following the quartzite ridge southerly for about 700 feet, several small greenstone dykes cut across the quartzite in a direction roughly parallel to that of the vein. About 600 feet north-easterly from the

shaft a coarser greenstone outcrops in one or two places, about on the run of a belt of the same rock visible in the ridges on the other side of the valley, where it shows a width of at least 125 feet. If this belt is actually continuous underneath the soil of the valley, it would thus pass about 400 feet north of the vein and with a course generally parallel to it, whilst the smaller dykes before mentioned would probably represent tongues connected with it.

The mine is equipped with power drills, hoist and pumps suitable for carrying on development work.

Richardson mine.

The workings known as the Richardson mine are situated about two miles and a half north of Desbarats village near the south-east end of Desbarats lake. These consist of a small prospecting shaft and a number of shallow pits and trenches extending over a distance of about three-quarters of a mile along the strike of a series of greenstone dykes which cut the jasper conglomerate of the sedimentary series. The evidences of the intrusive nature of the greenstone are here very marked, long narrow strips and lenses of the jasper conglomerate being included in the igneous mass. Some of the mining work done here is altogether in the greenstone, as in the case of the before-mentioned shaft. Here, as so frequently observable elsewhere in the district, the rock is much decomposed and the resulting ochreous material has stained it, giving a very tempting ferruginous appearance, whilst in the jointing, etc., it has at times consolidated to form fairly good hematite ore.

Most of the trenching and test-pitting east of this shaft has evidently been done with a view to the examination of the contacts along these inclusions of jasper conglomerate. At all the points uncovered, the ochreous material and stain were much in evidence and at some points a little chalcopyrite with malachite stain shew the presence of copper in small quantity.

Stobie Iron mine.

The Stobie iron mine is amongst the older discoveries of the district. It is situated near the western end of Gordon lake. The openings made consist of a rock-cut in a ridge of white quartzite, run in to catch a small vein of hematite averaging about five feet in width. In the face of the bluff the vein in going upward splits into two branches, each about three feet thick. On the bare rock-surface of the top of the ridge it seems to be represented only by a number of small stringers of ore. From the end of the open cut, a tunnel has been run in, but this is now closed by a cave in at a distance of about 30 feet from the mouth.

It is said that several thousand tons of good ore were shipped from this opening many years ago, a statement which is borne out by the existence of a stope above the tunnel, measuring about 80 feet in length by 50 feet in height, and having a width varying from 3 to 8 feet.

The quartzite has a strike at this point of N. 55 W., and dips about 45° to the south at the bottom of the ridge, curving over, however, till the dip flattens out to about 20° on top. About a quarter of a mile to the north, an east and west ridge of greenstone rises up, representing evidently an intrusion through the quartzites.

At a number of other points in the district exploratory work has been done on ferruginous outcroppings of a somewhat similar nature, either in the greenstone or in the inclosing rocks near the contact. These places show all grades of material from ochreous stained rock to the consolidated ocherous product constituting specimens of good hematite. At none of the points visited, however, had any large bodies of iron ore been proved to exist.

The Sudbury Mining District.

Dr. Alfred E Barlow.

Work by Dr. Barlow.

From the first of the year until the beginning of field operations on June 6, Dr. Barlow was engaged in making detailed petrographical examinations of rock specimens collected by some members of the staff as well as of the large suite of type specimens taken as illustrative of the various formations met with in the geological examination of the Sudbury mining district during the preceding season. In addition to these, determinations and descriptions were furnished of some of the specimens collected by Messrs. W. F. Robertson and H. Carmichael of the British Columbia Department of Mines.

When this work was finished, Dr. Barlow left for Sudbury with instructions to complete as far as possible the general geology in the vicinity of the southern nickel belt, and also to do such detailed work in connection with the Canadian Copper Company's mines as would serve to illustrate on a map of comparatively large scale, the occurrence of these justly celebrated deposits of nickel and copper ores. It is now intended to publish two maps engraved on copper, showing in a general way, the geographical distribution of the various rock-types and formations encountered. These, in accordance with our usage, will be called the 'Victoria Mines Map' and the 'Sudbury Map.' The details of the work in the vicinity of the Canadian Copper Company's

Map.

mines at Copper Cliff, will be shown in two sheets, each on a scale of 400 feet to an inch, extending from the vicinity of Kelly lake and the Evans mine northward to the Lady Violet mine and the Manitoulin and North Shore Railway. Another but smaller sheet on the same scale will exhibit the geological relations of the deposits known as the Elsie and Murray mines. Mr. O. E. Leroy, M. Sc., of McGill University, assisted me in both the geology and topography. Work by O. E. Leroy.

The geological history of the Sudbury mining district, as revealed by the rocks now exposed at the surface, evidences volcanic action on a large scale, accompanied to a certain extent, and followed largely by the deposition of ordinary aqueous sediments in a shallow ocean. The rocks represent the Huronian period, and are the oldest known clastics with which geologists are at present familiar. Classified petrographically they are as follows:—

1. Quartzite.
2. Tuffs.
3. Breccia or agglomerate.
4. Greenstone.
5. Gneiss (micropegmatite).
6. Granite.
7. Olivine diabase.

Rock types.

1. Quartzite.

Macroscopically these rocks are massive, though distinctly stratified, of a pale gray, reddish, yellowish gray, or greenish gray colour. They are intimately associated with, and often inter-bedded with the tuffs and breccias, so that it is frequently impossible to separate the two in mapping them. Macroscopic characters of quartzite.

Under the microscope the thin sections exhibit a rock made up chiefly of quartz, with a somewhat smaller proportion of feldspar, most of which is unstriated, and therefore presumably orthoclase. Occasional grains of microcline were noticed showing, the characteristic fine 'cross-hatched' twinning or 'fenster' structure. Much of the feldspar is decomposed into muscovite (sericite) occurring in irregular pale yellowish or colourless scales and plates and which, together with fragments of undecomposed feldspar and finely divided quartz, make up a matrix in which the larger individuals of quartz are embedded. The structure of the rock is for the most part interlocking, but some speci- Mineralogical composition of quartzite.

mens show distinct clastic structure, while in most the resemblance to well authenticated recrystallized clastics is such as can hardly be mistaken. A little chlorite, biotite, calcite and leucoxene are also usually present. These quartzites are at the summit of the clastic series of the district. To the north-west of Sudbury they occur in very massive beds, the lines of stratification being either very indistinct or altogether absent. A careful examination of the whole belt shows that it forms a synclinal basin resting upon the steeply dipping tuffs or ash rocks which underlie the greater part of the town of Sudbury. Nearly all of the exposures of the clastic rocks in the south-eastern part of the township of McKim and the whole of the township of Neelon belong to the quartzite series. On Ramsay lake they overlie the breccia or agglomerate exposed along the northern shores of the lake.

Distribution and stratigraphical position of quartzite.

2. *Tuffs.*

Tuffs or greywackes.

The rocks thus named, and concerning whose volcanic origin there is now but little doubt, have hitherto been often described as phyllites, mica-schists, felsites and greywackes. They evidently represent the consolidation of what was originally volcanic ashes, being one result of the volcanic action to which is due the presence at the surface of the great belts of greenstone and micropegmatite. These rocks are usually of a dark gray, purplish brown, or greenish-gray colour. They are often evenly and very distinctly banded in varying shades of gray. Jointing is very frequent and also slaty cleavage. They are often faulted and shattered, and in the vicinity of the various greenstone masses are penetrated and altered by irregular tongues and masses of the basic igneous material. They are frequently porphyritic and usually the phenocrysts are small, very thickly disseminated and of a very pale greyish or whitish colour. For this reason the rock has been referred to in the field as 'rice rock.' These phenocrysts were probably andalusite, but the skeleton-forms are now occupied by a confused aggregate of minute sericite scales and quartz. Other exposures show small yellowish brown spots made up of rutile, while others again show irregular phenocrysts of hornblende, now wholly replaced by chlorite. Thin sections examined under the microscope reveal a rock which has undergone rather extensive decomposition. It is usually made up very largely of feldspar with a smaller proportion of quartz in small angular or slightly rounded fragments. These are surrounded by a network of sericite and chlorite scales, together with a considerable amount of opaque iron ore. The larger individuals at least have evidently been ilmenite, but are now almost completely altered to leucoxene. The darker bands are made up of

Colour and structural features.

Mineralogical composition.

more thickly disseminated dust-like particles of iron ore, much of which at least is ilmenite.

3. Breccia or Agglomerate.

Description by Prof. Williams.

Perhaps the most interesting type in the district is a very distinct breccia made up of volcanic ejectamenta in the form of glass fragments of all shapes and sizes associated with some crystals or crystal fragments. This rock was very fully described by Professor G. H. Williams.* It is closely related to the other breccias of the district, which although showing rather clearly their close genetic relations with the widespread and long-continued volcanism are nevertheless largely made up of material which shows unmistakable evidence of water action. There are, therefore, the several varieties exhibiting gradations from the massive structureless types, the direct result of explosive action, to some which have been very evidently modified and rearranged by water. Such rocks are as a rule of a dark gray colour with the desseminated angular, subangular, or rounded fragments chiefly of quartz, granite, diorite, etc. Thin sections exhibit a rock made up of fragments chiefly of quartz, but also of orthoclase, plagioclase and microperthite. The most abundant composite fragments are granitite, composed mainly of microperthite and quartz together with a little biotite. All of the larger individuals are embeded in a matrix made up of much finer pieces of quartz and feldspar, together with biotite, sericite and a pale green chlorite. Occasional grains of pyrite and also some of ilmenite occur.

Composition of breccia.

Strategraphical position.

These breccias lie at the base of the series, usually passing gradually upward into the finer-grained and usually banded tuffs above. The vitrophyre tuff or volcanic breccia, described by the late Prof. Williams, is well exposed in the north-eastern part of both the Victoria Mines and Sudbury maps, extending from Vermilion to Whitson lake. Excellent exposures of the last mentioned breccia may be seen along the line of the Canadian Pacific Railway, immediately east of Sudbury and in the vicinity of the north shore of Ramsay lake.

Distribution

These various rock-formations in the district, must in my opinion, be regarded as all belonging to one geological system. In the region to the south-west, similar strata have been referred to the Huronian by the earlier Canadian geologists, and in the present state of our knowledge I see no good reason to abandon this view Of course, as yet, no particular evidence has been secured or reason advanced, why these rocks should not be regarded as very early or non-fossiliferous Cambrian, which by reason of their proximity to large masses of plutonic igneous material, have been subjected to more or less disturbance and alteration.

Formations belong to one system.

* In report by Dr. Bell, Annual Report Geol. Surv. Can., Vol v., (N.S.) 1890-91, p. 75, F.

On the other hand, there is very little to justify the attempt at a separation into Huronian and Cambrian, as was done on the map published by the Canadian Geological Survey in 1891, since it has now been very certainly ascertained that no pronounced geological break or hiatus, such as is present in other districts at the base of the Cambrian, occurs anywhere in this region. The succession from the felspathic sandstones, quartzites and slates of the Huronian into the black slates and tufaceous sandstones, classified as Cambrian, shows a quiet uninterrupted transition with perfect conformity between the component beds or strata. Their disassociation as Huronian and Cambrian, respectively, was at the first based partly on the resemblance of these black slates to similar rocks in the Animikie of the Lake Superior district and their comparatively unaltered character. The description of this large area on the map of the Sudbury mining district was only intended to be provisional, and the precaution was taken of expressing the uncertainty of the correlation by placing the query mark in the legend accompaning the map. As usually happens, however, in such cases, this mark of doubt was removed in subsequent official maps and reports published elsewhere apparently through ignorance, without any further attempt at fuller and more critical examination and study.

4. Greenstone.

Three main types of greenstone.

Under this convenient field term are included certain basic igneous rocks, many of which have undergone extensive metamorphism, so that in certain cases even the closest scrutiny under the microscope, fails to reveal the original form. Microscopical examination has, however, shown the existence of three main types, although all possible transitions between these are represented in the region :

(*a.*) Norite.
(*b.*) Diorite.
(*c.*) Amphibolite.

Norite.

The least altered phase of these rocks is represented by what may be referred to as a norite. The late Prof. Williams described the rock under the name of 'quartz-hypersthene-gabbro with accessory biotite,' but from the descriptions of the field relations furnished to him, he failed to realize that he was really examining a very fresh representative of the country rock of the nickel and copper-bearing sulphides.

Mineralogical composition of norite.

The microscopical examination shows the rock to be an eruptive of rather exceptional character and interest. It belongs to the general family of gabbros but with distinct traces and at times well marked

diabasic or ophitic structure. The abundance, and at times, preponderance of hypersthene or enstatite shows its close affinity with the norite, while what is very exceptional, the occurrence of an abundance of quartz, as an original constituent. In fact many specimens could be secured which would contain as much quartz as an ordinary granite. In some instances, noticeably at the Copper Cliff mines, a large quantity of micro-pegmatite or granophyre is present, the felspathic constituent of this graphic intergrowth being plagioclase. Exposures show a massive medium to coarse-grained dark greenish or brownish rock which is almost black in colour on freshy broken surfaces. Scales of deep brown biotite are usually conspicuous, while the quartz is perhaps equally so in very characteristic sapphire blue or purplish grains, the colour which is so often seen in the phenocrysts of quartz, porphyries. The presence of this sapphire-blue quartz often serves to identify the rock even when it has undergone very advanced alteration, as is the case with most of the outcrops of greenstone in the township of Denison. The orthorhombic pyroxene, either hypersthene or enstatite, which is often idiomorphic was the first of the essential minerals to crystallize. The hypersthene is strongly pleochroic, rose red to nearly colourless; the enstatite on the other hand has little or no colour or pleochroism and very few inclusions. The rhombic pyroxene is very subject to decomposition so that in most cases perhaps, areas of this mineral are replaced by an aggregate of pale green brilliantly polarizing fibrous or scaly serpentine (bastite). This alteration is often accompanied by the separation of minute grains of magnetite. In most cases even the fresh individuals of hypersthene are bordered by a compact strongly pleochroic green hornblende which is doubtless an original constituent. This primary hornblende likewise forms borders on areas showing the complete bastitic alteration. In addition to this there is undoubted secondary hornblende resulting from the alteration, first of the bastite into actinolite and this in turn to the ordinary type of green hornblende. The plagioclase is usually in broadly twinned, stout lath-shaped or tabular crystals, whose frequent interlacing arrangement produces the characteristic rude ophitic structure. Separations by means of Thoulet's heavy solution as well as the extinction angles show that this plagioclase is labradorite. The presence of innumerable brown dust-like inclusions, presumably of ilmenite, gives to the felspar its prevailing dark colour. The monclinic pyroxene occurs in large irregularly bounded grains. Biotite is an almost invariable constituent and is usually rather abundant and of undoubtedly primary origin. Apatite, magnetite, which is usually highly titaniferous, zircon, and occasionally grains of pyrite are present.

(*b*). Diorite.

Gabbro diorite.

The least altered phase of the rocks with which the ore bodies are associated is what the late Prof. G. H. Williams calls a gabbro-diorite, that is a diorite which gives unmistakable evidences in the hornblende of its derivation from pyroxene originally present. Mineralogically, this rock as now represented by the thin sections examined, is composed essentially of plagioclase and hornblende. This rock contains, as a rule, only disseminations of the sulphides usually worked. It shows plagioclase in comparatively large amounts. This is evidently labradorite. It usually has undergone rather advanced saussuritization but many individuals are still sufficiently fresh to permit of their identification by means of the extinction angles. The resulting products of alteration are mainly sericite, epidote and zoisite.

Composition.

The hornblende shows the pale interiors with the deeper coloured borders so characteristic of uralite. Biotite is almost invariably present and usually in large amount, often forming intricate parallel intergrowths with the hornblende. It frequently shows decomposition to chlorite. Ilmenite and highly titaniferous magnetite are the prevailing iron ores and these are present often in comparatively large amount. Most of the individuals are surrounded by opaque grayish leucoxene or the more normal sphene resulting from their alteration. The pyrrhotite and chalcopyrite occur as irregular skeleton or sponge-like masses chiefly associated with and imbedded in the coloured constituents. Quartz is almost invariably present, often in comparatively large amount, filling up the allotriomorphic interspaces left by the crystallization of the other constituents. It is not secondary but an integral part of the same magma out of which the other minerals have been formed. Apatite is often abundant, usually in small acicular prismatic forms. An increase in basicity is often accompanied by intense jointing and shearing action with frequent penetration and infiltration by vein quartz and calcite. Much of the original holocrystalline and granitoid structure is lost and replaced by a foliated texture marked by the parallel disposition of fibrous hornblende or actinolite and the pulling out or granulation of the plagioclase. The composition of the resulting amphibolite is essentially similar, but with prevailing less plagioclase and quartz, and more of the coloured constituents. The quartz is often in the small bluish or purplish grains so characteristic of the phenocrysts of the quartz porphyries of the Rainy lake and Yukon districts. Jointing structure is very prevalent, and this structure is so well and abundantly developed that it is almost impossible to secure good hand specimens without the sacrifice of a large amount of material. The schistose structure is also extensively developed and all gradations may frequently be observed in the same

Amphibolite.

rock exposure, from the massive gabbro-diorite through diorite schist, hornblende schist or amphibolite to chlorite schist. The effect of pressure is much more pronounced and usual in the basic phases of the rock and an amphibolite is the result. An increase in these processes of shearing accompanied by vein action, favours the abundant development of chlorite at the expense of both the hornblende and biotite and the production of a highly chloritic actinolite schist.

Nickel bearing rock.

The nickel-bearing rocks, include not only the norites, but some of the gabbre-diorites, which may be altered and differentiated forms of the norite and probably some of the more highly decomposed and schistose basic eruptives. In the vicinity of Copper Cliff and thence northward to the old Dominion Mine, it is possible to separate certain schistose basic eruptives, chiefly diorites and amphibolites, from the nickel-bearing eruptive or norite, the latter being of decidedly later age, but to the south-west, where the alteration is extreme, as in the township of Denison, it has been found impossible to do so in all cases. More detailed work might effect such a separation, for it is certain that all of the various basic rock types exist, but they are so intimately associated that it has been found impossible to effect a separation over the whole area. In addition, however, this greenstone portion, or nickel bearing eruptive proper, passes northward into a more acid rock of granitic composition, with usually well marked gneissoid structure. The rock has usually been referred to as a micro pegmatite. There is no sharp line of demarcation between. The change though gradual is usually sharp enough to enable a boundary to be placed between the two types with tolerable accuracy. Outcrops of this rock are evenly banded or foliated with a distinct strike and dip, often show distinct or porphyritic structure, weather a pale reddish or grayish colour and are frequently intersected by irregular and often intricate vein-like masses of quartz of pegmatitic origin. On freshly exposed surfaces they are dark coloured with often reddish or yellowish phenocrysts. Orthoclase is apparently present in considerable amount but plagioclasse (one near the acid end of the series, probably oligoclase or oligoclase, andesine) is more abundant. Biotite is the prevailing ferromagnesian mineral and much of it is often 'bleached' and altered to chlorite. In occasional instances the whole of it is thus altered giving to it the prevailing dark colour on fresh surfaces. The transition types between these and the greenstones show a varying proportion of hornblende, which in general diminishes in going northward, although certain bands of relatively greater basicity show an appreciable amount of this mineral, even at a considerable distance from the line of junction. One of the most noteworthy points in connection with these gneisses

Micropegmatite.

Composition.

is the prevalence of micropegmatite or granophyre, and also the fact that plagioclase and quartz are the component minerals. This micropegmatite, together with the bisilicate material, chiefly biotite or chlorite, and sometimes hornblende and accessory epidote, ilmenite and sphene, form a groundmass in which comparatively large phenocrysts of feldspar, chiefly plagioclase but sometimes also orthoclase and microperthite, are embedded. The feldspar individuals often form nuclei around which the granophyre is developed.

Granite.

Younger granite.

It has been customary of late years to speak of certain areas of acid intrusives occurring in intimate association with the nickel-bearing eruptives as the 'younger granites.' There are two varieties of this granite evidently of the same age. One variety which makes up the large area is a very decided 'augen' granitite-gneiss. In places, it seems to pass gradually into the second variety, a finer or more even-grained granitite with ill-defined or no foliation. This coarse or 'augen' granitite-gneiss makes up a well marked bathylith which forms a border along the southern side, of the main or southern nickel belt. Hand specimens usually show a very beautiful and typical coarse flesh red 'augen' granite-gneiss.

Composition.

Under the microscope, the thin section shows the rock to be made up chiefly of microcline, orthoclase, albite, oligoclase, biotite and quartz with epidote, sphene and apatite as accessory minerals and calcite, epidote, zoisite, sericite and chlorite as secondary products of decomposition. The orthoclase and microcline sometimes occur free; but for the most part are intergrown with the albite, forming both microcline, and orthoclase, microperthite. The quartz is the usual granitic variety, frequently showing intense strain shadows and sometimes granulated into a fine interlocking mosaic. The feldspars of the rock, although like the quartz often much cracked, broken and granulated, are comparatively fresh. Reddish-brown iron oxide has spread through the cracks, giving a cloudy or stained appearance to many of the grains. Much of the oligoclase has undergone considerable saussuritization, the resulting products being epidote, zoisite and sericite. It is usually stained a deep reddish-brown colour. The biotite is usually 'bleached,' and has often undergone more or less complete chloritization. The 'augen' are usually made up of a comparatively coarse-grained aggregate or microperthite or microcline and quartz. More rarely it is a single crystal of felspar, never with well-defined crystal boundaries.

The finer-grained variety of granite is characteristic of two areas. The smaller one is situated immediately east of the Lady Violet mine and extends a little north of the Manitoulin and North Shore Railway on the boundary between McKim and Snider townships. The other larger area extends from the main line of the Canadian Pacific Railway, a little south-east of the Murray mine, north-east, nearly to the Little Stobie mine in the township of Blezard. A microscopical examination of the thin section shows an aggregate of quartz, orthoclase, plagioclase, biotite, hornblende, magnetite and zircon. The rock has evidently been subjected to great crushing. The structure is by no means uniform, but larger fragments are embedded in a finer-grained mosaic, which have resulted in great part from their peripheral granulation. The magnetite is highly titaniferous, as it is often surrounded by borders of leucoxene or the more normal sphene. Two varieties of granite.

Olivine Diabase.

The rock thus named, characteristic of what has been called the later dykes, is very uniform in mineralogical composition and structure. Hand specimens show a rock which is dark gray, greenish gray to almost black, with spheroidal rusty weathering which is very characteristic. In many instances, exposures exhibit a rude basaltic structure and are frequently porphyritic with phenocrysts of yellowish or greenish labradorite, often an inch or even more in diameter. The alteration of these phenocrysts produces the mineral 'Huronite,' so named by Thomson. These dykes possess well marked selvages of fine-grained, occasionally glassy material (tachylite) and present every gradation between basalt and diabase. The thin sections of the fairly coarse rock show a remarkably fresh olivine-diabase, made up chiefly of plagioclase, augite and olivine. The plagioclase is the principal constituent and is generally quite fresh and glassy, although occasionally somewhat turbid as a result of incipient decomposition. Being the earliest constituent to crystallize, it is in idiomorphic well-twinned, tabular or lath-shaped crystals, which have a marked ophitic arrangement. The extinction angles clearly indicate labradorite. The twinning is according to the albite law, but a combination of the albite and pericline law is very common. Occasional individuals exhibit twinning according to the rarer baveno law. The augite shows a very irregular or jagged outline with characteristic imperfect or interrupted cleavages. It is reddish brown to violet in colour, and very distinctly pleochroic. The olivine occurs in more or less rounded pale yellow grains and sometimes fills in the spaces between the feldspar crystals. It is remarkably fresh but occasionally shows decomposition to a deep Olivine diabase dykes. Composition.

green compact serpentine (antigorite?). Apatite is very abundant in the usual acicular prismatic forms, and the opaque constituent is probably ilmenite. Some of the thin sections are very instructive, especially as regards the order of crystallization of the various mineral constituents. Apatite was certainly the first to crystallize, as it occurs in sharp, well defined elongated prisms which are embedded in or pierce the other constituents. The labradorite has, in most cases at least, crystallized before the augite, but its relation to the olivine is not quite so distinct. In some cases the olivine has the rounded outline it usually assumes when its crystallization is not interfered with, but often it may be found occupying the triangular interspaces between the feldspar laths, or sharply moulded upon them. It appears, therefore, that the period of crystallization of the olivine, certainly overlapped that of the labradorite, although in general the olivine is distinctly later. Most of the ilmenite likewise is earlier than the plagioclase, but occasional individuals contain crystals of olivine and plagioclase, showing that some of the ilmenite formed after the olivine and plagioclase.

Age of dykes.

These dykes of olivine diabase are distinctly later in age than the rest of the associated rock. They cut the greenstones and associated micropegmatite as well as the ore bodies themselves. They likewise cut the tuffs, breccias and quartzites, although one dyke was noticed which did not reach the summit of the quartzites, but was cooled against the upper beds. Their occurrence and the mineralogical composition of some of them in the neighbourhood of the Copper Cliff mine certainly very strongly suggests that they represent differentiated portions of the ordinary norite magma, representing the dying efforts of the very pronounced and long continued volcanism. For the most part they have a fairly constant direction, but present frequent broad curves and occasional faults. Two of the largest dykes met with, vary in width from 150 to 200 feet, and were traced with practically unbroken continuity from the north-west corner of McKim township south-east to Ramsay lake. There is no local enrichment whatever of the ore bodies in the vicinity of the dykes as has frequently been surmized. The influence occasioned by their passage in these ore bodies is extremely local and very insignificant. In the vicinity of the Copper Cliff and Murray mines and the area intervening, many of the dykes have been encountered and it has been found possible over this limited area to accurately determine and map their dimensions and direction, and although the prevailing direction is perhaps north-west and south-east, many of them occupy fissures with courses very widely divergent.

Width and length of dykes.

Age relations of eruptive rocks.

The relations between the various eruptive rocks appear to be somewhat different from those supposed in previous reports. In the Sudbury sheet, it has been possible to separate and map out a series of greenstones and schists, which are the oldest eruptives met with. These are cut through and altered by what is commonly called the 'younger' granites and the breccia, formed by the invading granite; and the included greenstones covers considerable areas which are capable of being mapped. The younger granites themselves contain many fragments and even areas of these intruded greenstones. The norite, with which the nickel and copper-bearing sulphides are immediately associated is intrusive through and cooled against both the greenstone and breccia, and in many places a well-marked selvage or finer-grained portion of the norite is seen in the vicinity of the line of junction. The relation of the granite and the norite is, however, more complex, for although at one point the rock has cooled against the granite, as in the vicinity of No. 2 mine, Copper Cliff, at other places not far distant irregular tongues or apophyses of the granite apparently pierce the norite. It is probable, therefore that their periods of intrusion were so closely synchronous that they overlapped in their period of crystallization, and that the later secretions from the granite magma forced or ate their way into the norite.

Origin of nickel and copper sulphides.

The action to which the now famous nickel and copper ore bodies owe their present position and dimensions is much more complex than at first supposed, but the detailed examinations of many of the more important ore-bodies has served to emphasize very clearly some of the conditions attending and influencing their formation, and which were either minimized at first or overlooked altogether. These immense bodies, often of very pure sulphides, are no doubt, as generally supposed, genetically connected with the huge bathyliths of intrusive rocks with which they are always associated. It is also equally true that this sulphide material was introduced simultaneously and as integral portions of this same magma.* In obedience to Sorets' principle governing the crystallization of complex solutions, these sulphides are segregated together for the most part in the immediate neighbourhood of the cooling surfaces which may be granite, breccia, greenstone or the several clastic rocks already described. Such a hypothesis however is manifestly inadequate to explain the presence of the larger ore bodies at least, and a more intimate acquaintance and study of their occurrence shows rather clearly that solution and redeposition has played a very much more important part in their formation than has hitherto been supposed. There can be little doubt of the abundant presence of such

* The Nickel and Copper Deposits of Sudbury District, Bull. Geol. Soc. of Am., 1890, pp. 135-36.

heated solutions, containing the various mineralizing agents, and they evidently began their work of dissolving out, transportation and redeposition, long before the magma had cooled, bearing their heavy burdens of sulphide material obtained from the magma to occupy the various cavities and fissures as fast as these were formed. It has long been remarked that everywhere in the vicinity of these ore-bodies, the inclosing rocks have undergone pronounced chemical and dynamical metamorphism. In many cases, all of the minerals are secondary and little or no trace has been left of the original structure. In addition, there is seldom lacking evidence of minor but appreciable and very frequent faulting and stretching, inducing the formation of the necessary spaces, while in many places there has been a replacement of considerable portions of the inclosing rocks by the sulphides. This extreme alteration of the wall rocks inclosing the ore bodies is the reason that the true nature and exact boundaries of the real parent plutonic remained so long unknown, so that the earlier petrographical descriptions referred to the rock as diorite, uralitic diorite, gabbro-diorite, diabase, uralitic-diabase and hornblende schists. The Baron Von Foullon and Prof. G. H. Williams were the first to call attention to the occurrence of the norite, but the true significance of their discovery was not appreciated until the appearance of Dr. T. L. Walker's 'Geological and Petrographical Studies of the Sudbury Nickel District,' which must be regarded as marking a very decided advance in our knowledge concerning the true nature and relations of these deposits and their associated rocks.

Three main bands of norite.

There are three important bands of basic igneous rocks with which workable deposits of the various sulphides carrying nickel and copper occur. They may be distinct and separated, but genetically and mineralogically they are essentially identical. They likewise probably belong to the same geological period and are nearly, if not quite synochronous. The most northerly of these bands starts from the old Ross mine (W. R. 5), near the line between lots 5 and 6, on the concession line between III. and IV. of the township of Foy, and extends in an east-south-east direction into the township of Bowell, where on lot 6, in Con. II. it branches. One band runs south-west into the townships of Lumsden and Morgan, where its limits have not been definitely ascertained. The other band runs on to the east, cutting across the township of Wissner and crosses the Vermilion river, immediately north of Bronson lake. Trending still more to the north, it connects with the large basic area to the west of Lake Wahnapitae. This mass extends for the most part in a southerly direction, and as far as at present ascertained, is lost in the extensive sand and gravel plains of the eastern part of Garson and the western of Falconbridge. It is thus

Northern band.

so far uncertain whether this mass is continuous with the southern band of similar rock which, running through the third concession of Garson, is likewise covered up by the heavy mantle of drift. In my opinion this belt of basic igneous material which runs through Garson, extends in unbroken continuity beneath the drift, reappearing at the surface in the 4th and 5th concessions of the township of Falconbridge. It would however be extremely difficult to fully corroborate this view, as in many places the covering of sand and gravel is over 100 feet in thickness. Distribution.

The second important band of basic igneous rocks, according to the present state of our knowledge, starts on lot 12 in Con. III of Trill, extends north and north-east through this township into Cascaden, and crossing under Windy lake, goes on uninterruptedly through the north-west corner of Dowling to lot 2 in the 4th concession of Levack. There is probably then a considerable break between this and the Ross mine on the northern nickel range, on the one hand, and the basic band which runs through part of Morgan, but both bands are almost identical in mineralogical composition and are certainly genetic equivalents. It is along the northern contact of this band and the granitite gneiss to the north that the well known Levack deposits are situated. Middle band on Windy lake eruptive.

The most important and famous band of norite, however, is the southern one, which starting in more or less small and isolated patches in the township of Drury, coalesces into one large band in the eastern part of this township. It then extends in a north-easterly direction as far as lot 3 in the 3rd concession of Garson, a distance of over thirty-two miles. The extremely basic portion would average nearly two miles in width throughout this length. The basic rocks extend over the greater part of the 3rd, 4th, 5th and 6th concessions of the township of Denison. About lot 2 it attains its maximum width of nearly four miles, but a short distance east is divided up into two belts by the intrusion of a mass of "augen" granitite-gneiss. The northern, which is the more important of these two belts, runs in a direction of N.N.E. through the north-eastern part of the township of Denison and the south-eastern corner of the township of Fairbank. Thence it extends across the Vermilion river, covering the northern part of the 6th concession of Graham, and portions of cons. I, II and III, of the township of Creighton. From this place it runs across the central part of Snider, through the north-western corner of McKim, and the south-eastern part of Blezard, and with the exception of lots 1 and 2, extends with unbroken continuity across the third concession of Garson. Through Creighton and Graham this band is about two Southern band.

Distribution and extent.

miles in width, while near the Blezard line it measures nearly one and a half miles across.

On lot 2, concession III of Snider, this norite sends an irregular tongue or dyke-like extension south-eastward and south, on which are situated the mines of the Canadian Copper Company at Copper Cliff. This band runs across the north-east end of Clara Belle lake. Crossing Lady Macdonald lake, it runs with practically unbroken continuity as far as No. 2 mine. The famous old Copper Cliff mine is a veritable chimney of ore, occurring in connection with an isolated stock of norite which comes in contact with felspathic quartzites and green schist. The openings in the vicinity of the Ontario Smelting Works belong to three separate masses of norite, which are surrounded by banded tuffs and quartzite. It is difficult to obtain hand specimens from the small area of norite in which the Evans mine is situated, sufficiently free from the sulphide material for purpose of examination.

The southern belt of basic igneous rocks runs across the Vermilion river, covering parts of concessions III, IV and V of Graham; thence on through Waters and Snider, it keeps to the south of the granite and north of a prominent ridge of quartzite, passing the Copper Cliff between mines No. 1 and 2. It is made up chiefly of diorite and amphibolite with possibly minor bodies of norite and a large amount of tufaceous material. Another large, though irregular body of altered norite, forms the rough country east of Sudbury and north of the Canadian Pacific Railway. It sends branches north-east across concession VI. Neelon, and south-west forms a series of hills to the north of Ramsay lake and Kelly lake.

Nickel mines. The Little Stobie mine, Dominion, the Davis property, Kirkwood and Cryderman mines, are situated on the borders of the main belt of norite with green schist. The Stobie and Frood mines occur in conjunction with comparatively small stocks or areas of norite, which are separated from one another. The Elsie mine occurs at the junction between norite on the one hand and green schist tuffs and hornblende porphyrite on the other. The Murray mine occurs at the junction between granite and greenstone breccias and green schists on the one hand, and the main band of norite on the other; while the old Cameron mine, further to the north-east, is found at the junction between the granite and norite. The North Star and Creighton mines occur at the junction between the granite and norite.

International nickel. Perhaps the most significant occurrence in regard to the progress of mining in the district, during the year, has been the formation of the

International Nickel Company, under the laws of the state of New Jersey. This company is really formed by a consolidation of the Canadian Copper Company and the Orford Copper Company. The interests of the Anglo-American Iron Company and the Vermilion Mining Company have also been acquired by the new corporation, as well as the properties of the Nickel Corporation and the Societie Miniére Caledonienne, in New Caledonia. During the past summer operations at Copper Cliff were carried on very slowly, but it is intended to resume work during the coming season on a much more extended scale than ever.

Mond Nickel Co.

The Mond Nickel Company are actively engaged in the production of a high grade matte, which is shipped in barrels to the refinery at Clydacw, Wales. It is stated authoritatively that these works have a capacity of about 1,000 tons of refined nickel per annum. The Lake Superior Power Company have also been mining at Elsie, and smelting the ore at the Gertrude mine. But beyond some prospecting and examination of various locations, all of the other properties are idle.

Statistics.

STATISTICS OF NICKEL AND COPPER PRODUCTION IN ONTARIO.

Year.	Ore Raised.	Ore Smelted.	Nickel Content.	Copper Content.
	*Tons.	Tons.	Tons.	Tons.
1890	130,278	59,329	.....	.....
1891	85,790	71,480	.....	.....
1892	72,349	61,924	2,082	1,936
1893	64,043	63,944	1,653	1,431
1894	112,037	87,916	2,570½	2,748
1895	75,439	86,546	2,315⅝	2,365½
1896	109,097	73,505	1,948½	1,868
1897	93,155	96,094	1,999	2,750
1898	123,920	121,924	2,783⅜	4,186⅜
1899	203,118	171,230	2,872	2,834
1900	216,695	211,960	3,540	3,364
1901	326,945	270,380	4,441	4,197
1902	219,703	211,847	5,347	3,503

*2,000 pounds.

Artesian Borings, Surface Deposits and Ancient Beaches in Ontario.

Dr. Robert Chalmers.

Work during winter of 1901-2.

The winter of 1901–2 was spent in the office, compiling the data collected in south-western Ontario during the previous summer, relating to petroleum, natural gas, salt wells and water supply, and in examining drillings, correlating logs of wells, etc. Information was furnished to drillers and others from time to time where work was going on. Proofs of my report on the surface geology of western New Brunswick were also revised and the report, with accompanying maps (No. 1 N.W. and No. 2 S.W.) was prepared for the Annual Report, vol. XII.

Character of surface deposits in Glengarry county, Ont.

Early in May, a few days were spent with Dr. R. W. Ells, of this survey, in Glengarry county, Ontario, examining the surface deposits there. The general surface of the country forms a plain about 350 feet in height * with a slight descent towards the St. Lawrence river. Moraines or boulder-clay ridges occur in some places, which trend approximately north-east and south-west, and numerous boulders from the Archæan rocks are scattered about over the area. Terraces, or water-levelled plains, usually consisting of coarse materials, occur associated with the boulder-clay ridges in certain localities, and appear to have been formed of the materials derived from the latter by their denudation during the Pleistocene submergence. These beds, though resembling boulder-clay, are usually stratified, and moreover, they contain marine shells of the following species,—*Saxicava rugosa*, *Macoma Balthica*, *Mya arenaria*, etc., which prove their marine origin.

Nature of the field operations of 1902.

On June 6, I began the regular work of the season, which was, for the most part, a continuation of that of 1901, embracing, besides the investigations respecting matters of economic importance, a detailed examination of the surface deposits. Some of the shore-lines of the ancient lakes were traced, wherever it was practicable to do so, and these are shown on the accompanying sketch-map. Though a large body of facts has been obtained, many of them new; full data from all parts of the interlake peninsula are not yet at hand, and further study of the region is necessary, especially in the north-western part, before a full and detailed report on it can be prepared.

*All the elevations in this report are referred to mean sea level, unless otherwise stated.

At Brockville a few days were spent endeavouring once more to ascertain the nature of the contact between the known marine Pleistocene beds and the clays and sands to the westward, which appear, so far as studied, to be of lacustrine origin. Gray and yellow sands holding shells of *Saxicava rugosa* and *Macoma Balthica* along with numerous calcareous concretions, were found on the banks of the St. Lawrence river half a mile above Brockville. Further west, near Lyn, gray, stratified clay was seen to underlie, and to be in contact with, these yellow beds. Similar deposits, occupying the same relative position, occur at the Grand Trunk railway bridge below Lyn. These two kinds of clay, the uppermost almost invariably containing concretions, were noted in a great number of places on the north side of Lake Ontario and Lake Erie.

PETROLEUM AND NATURAL GAS.

Explorations for oil and gas.

Considerable exploratory work in search of oil and gas has been carried on in the province of Ontario during 1902, and though most of it was unsuccessful, yet drillers and experts do not seem to have been discouraged. Oil and gas have been discovered in a few new localities, more particularly at Wheatley and in the townships of Romney and Raleigh, in the county of Kent. The first place where these were found was in the village of Wheatley, on the boundary line between Essex and Kent counties, at the depth of 1,110 feet. After the well was 'shot' a pressure of 440 pounds was reported. Gas from this well was piped into the dwellings, stores and factories in the village. Meantime, other wells were sunk in the vicinity and to the east, in Romney township, about two miles and a half from Wheatley, where the drill reached depths of 1,100 to 1,300 feet. Large areas of land were taken up there and north-eastward towards Charing Cross in the township of Raleigh and to Northwood in the township of Harwich on the supposition that an anticlinal axis extended in that direction. Two of the wells in Romney township were yielding some oil and gas at the time of my last visit in October and drilling operations were quite active. In November, oil was struck in Raleigh township near Charing Cross, about eight miles south of Chatham at a depth of 320 feet, or about 200 feet into the Corniferous limestone. Very exaggerated reports concerning this well were published, but from last accounts it was yielding oil with a pressure of about 140 pounds. The sinking of other wells was at once undertaken in the vicinity in concessions 12, 13 and 14 township of Raleigh, to depths ranging from 320 to 370 feet. Four of these are reported to be giving oil in greater or less quantities, but whether they are of permanent value or not remains to be seen. At

Wheatley.

Raleigh.

Northwood.

Northwood, seven miles east of Chatham, near the Grand Trunk railway, oil has also been discovered, but in what quantities I have not ascertained. If an anticlinal axis extends from Wheatley to Northwood and Bothwell as maintained by some of the oil operators, its length must be about fifty miles in a north-east and south-west direction and the probabilities are in favour of profitable wells being found at some points along its course. The oil is, however, met with at two different horizons. At Bothwell, Northwood and Raleigh it occurs in the Corniferous limestone at depths between 300 and 400 feet, while at Romney and Wheatley it is found 1,100 to 1,300 feet deep in a hard vesicular limestone similar to that in which gas occurs in Essex county.

Collingwood.

In regard to natural gas, it may be added that there has been a renewal of explorations at Collingwood, and the Trenton rocks there are now yielding it in limited quantities, sufficient, however, to heat and light some of the dwellings and drive the machinery in a few industrial establishments. The gas is found at depths varying from 100 to 300 feet, and at two or three horizons in each well, the surface deposits being from 30 to 40 feet thick. The first gas occurs at about a depth of 135 to 170 feet, or 100 to 149 feet in the rock, while the deepest gas rock is, as previously stated, at 300 feet or more below the surface. In Mr. Wm. Carmichael's well on Campbell street, in the town of Collingwood, the following beds were passed through:—(1.) Clay, 25 feet, hardpan, 8 feet; total for surface deposits, 33 feet. (2.) Trenton limestone, first gas at 135 feet; second at 165 feet; third gas at 237 feet, and the fourth and deepest at 288 feet; total depth of this well, 301 ft. 2 in. This may be taken as a typical example, showing the depth of the gas strata in all the wells sunk at Collingwood. The pressure in these wells is only from 20 to 30 pounds. A well was recently put down at the base of the Niagara escarpment, near Kirkville, passing through the Utica shales before reaching the Trenton, the latter being penetrated to a depth of 200 feet. A pocket of gas was encountered at this depth, and the pressure was so great as to throw out the water which was in the well and stop work: but it soon fell back to what it is in the wells in Collingwood. The greatest number of wells producing gas are found along a north-east and south-west belt, which passes through the town, though a few sunk to the south of this line have yielded gas. Three wells were put down on the high grounds west of the Niagara or Blue Mountain escarpment in 1901 to test the Trenton and other rocks there for gas, the heavy capping leading the drillers to suppose that the conditions were more favourable for an increased flow than in the valley to the north. One of these wells yielded a trace of gas, but the two others gave neither gas nor oil.

Niagara escarpment near Collingwood.

In the older and larger gas fields, exploratory work and drilling have been continued in some localities, more especially in Essex county, but, so far as I could learn, without much success. The export of gas from the last-mentioned field to Detroit, U.S., was stopped in the autumn of 1901, but although the wells have been thus relieved, a steady though slow diminution in the flow of gas from the whole territory is apparent. In the Welland field a lessening of the flow is not so evident; nevertheless it is well known that the pressure there is also slowly diminishing. Gas production in Essex and Welland field.

SALT.

The salt industry is still in a backward condition, though a new salt block has been erected at Sandwich, Essex county, and two new wells sunk near Sarnia, reaching a depth of 1,680 feet, and penetrating thick seams of rock salt. The works of the Windsor Salt Company have also been enlarged. The salt industry.

The great extent and thickness of the salt beds of Ontario were referred to in the last Summary Report. During the past summer inquiries were made regarding the limits of the area occupied by them, and it was found that the opinion which prevails among the best informed of those engaged in the manufacture of salt is that the beds occupy a single basin and are practically continuous throughout. There are probably local areas in it without salt beds, these having formed islands in the sea or lake of the Onandago period upon which salt was not deposited. The salt basin extends from a point a few miles north of Kincardine, Bruce county, to Windsor or Sandwich, Essex county, a distance of about 170 miles, and its greatest width across the central part of Lambton county is about 40 miles. Whether it reaches the Lake Erie basin is doubtful, the wells drilled for gas near the lake not indicating salt. Neither is the western border known, but the salt basin probably extends below the waters of the southern part of Lake Huron and below St. Clair lake and St. Clair and Detroit rivers. The eastern and southern limits are irregular, but have been traced with some approach to accuracy from its presence or absence in the wells sunk in this part of Ontario. Six beds of rock salt, one above another, have been passed through by the drill in Bruce county, and also in the deep well at Petrolia, but it is from the upper seams only that the brines used in the manufacture of salt are taken. The depth of the rock-salt is somewhat variable in different parts of the field, and the beds have evidently the same dip as the inclosing strata. At Kincardine near the northern margin the uppermost salt seam is a little more than 300 feet below mean sea level; at Petrolia it is 615 Extent and thickness of the salt deposits of Ontario. Six seams of salt.

Depth of salt beds.

feet below the same datum; at Courtright 1,020 feet, and at Windsor 985 feet. From these figures it would appear that the deepest part of the salt basin is in the western part of the area. At Courtright, however, only one seam, 22 feet thick, was struck, and it is possible the uppermost salt seams are absent there.

PLEISTOCENE GEOLOGY, ANCIENT SHORE LINES, ETC.

Reference to classification of surface deposits.

A general classification of the surface deposits of the interlake peninsula of Ontario was given in the Summary Report for 1901, and two boulder-clays, separated by thick interglacial beds, were briefly described. The work of the past season has shown this classification to be substantially correct, and though in minor details the sections of the deposits may, in some localities, be slightly different in their constituent parts, it is now evident that there were, at least, two glacial periods in this region with an interglacial interval of considerable length between them. Evidences of these were noted as far east as Kingston, also at Trenton, Oshawa and along the Belleville and Midland railway. Further west the two boulder-clays were seen at Toronto, Woodstock and other places too numerous to mention. The stratified clays and sands associated with the boulder-clay deposits can only be very briefly referred to in this report.

Two boulder-clays.

Ancient Shore lines of the Great Lakes.

Ancient shore lines of the great lakes.

In south-western Ontario the evidences of ancient water-levels above the shores of the present lakes are shown in a number of places by shore lines cut into the clays, sands or gravels along sloping surfaces, and also by terraces formed of stratified deposits, and in some instances by beaches which have been thrown up by the waves. The strongest example of an ancient, abandoned water-level is probably the terrace abutting against a slope, but all three forms can be seen in numerous places in this region. In regard to the shore lines which were observed, I shall take the highest first, and the others in descending order. The elevations are all referred to mean sea level. Dr. J. W. Spencer speaks of shore lines or terraces "up to altitudes of 1,700 feet,"* but the highest of those observed by the writer did not reach that elevation. A terrace or bench extends for miles along the Niagara escarpment in Simcoe county at a height of about 1,400 feet (bar). In the central part of the peninsula, along the Owen Sound branch of the Canadian Pacific Railway, a number of local shore lines

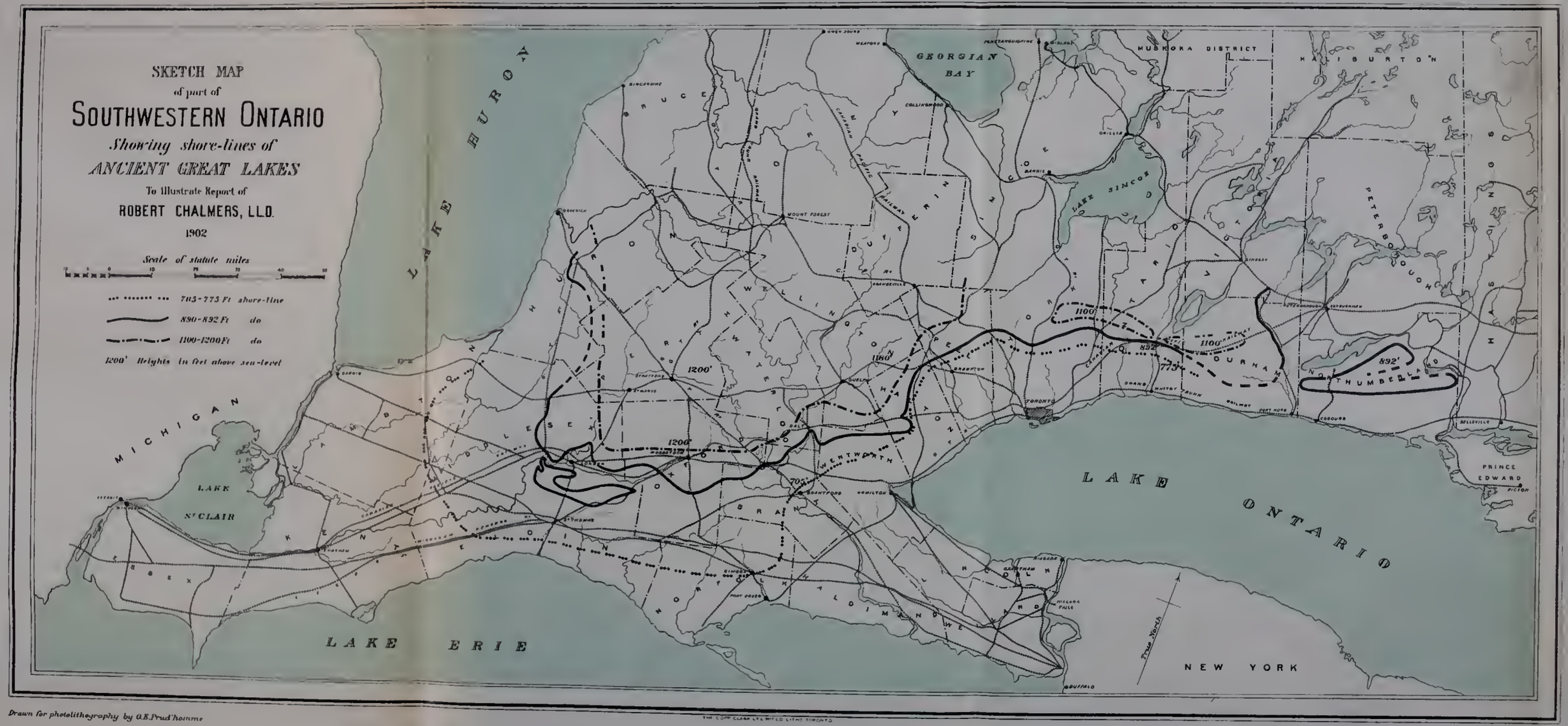
Highest shore lines observed.

* A review of the history of the Great Lakes, American Geologist, vol. XIV, No. 5, p. 296.

Geological Survey of Canada

ROBERT BELL, Sc D., (Cantab) LLD, MD, FRS, ACTING DIRECTOR

1903.



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and terraces were observed,—one at Caledon station and Millville Junction, 1,356 feet in altitude extending westward some distance. Another lower terrace runs nearly parallel to the latter at a height of 1,260 feet. But the most extensive of these high-level terraces—one which may really be called a plateau, is upon the northern watershed of Lakes Ontario and Erie, extending from Durham county westward to Perth county. In Durham, Ontario and York counties it is comparatively narrow and the general direction is approximately east and west the average elevation being about 1,100 feet. A wide depression crosses it east of the Credit river.

West of this the plateau expands into a broad, roughly triangular area with the town of Stratford at about the centre, and is limited to the northeast by the higher grounds of Wellington and Grey counties. Upon its surface low hills and ridges rise above the general level, but for the most part it is flat and even and occupied by gravels, sands, silts and clay in a stratified condition, though boulder-clay is often seen levelled off at the same plane as the stratified beds. This plain increases in height from east to west, at Pontypool, in Durham county, the elevation being 1,100 feet, while at Stratford, about 140 miles to the west, it is 1,200 feet.

Shore lines, how far traced.

Descending from this high-level terrace, we reach a shore line which, excepting the Iroquois beach, is the best defined of those met with on the north side of the lower Great Lakes. Its average elevation above mean sea-level is 890-892 feet, according to the railway levels, on which all the measurements were based, and it seems to be practically horizontal throughout. This shore line was traced from Trent river, in Northumberland county westward to Hyde Park in Middlesex county, a distance of fully 200 miles. From Hyde Park it trends northward, and was followed to Clinton, though not as closely as in its east-and-west extension. East of the Trent river, or rather east of the Belleville and Midland railway, (Grand Trunk,) it could not be definitely traced. In its general features it exhibits cut terraces, wide, water-levelled plains, and in some instances, wave-built beaches. It is intersected by a transverse valley in its eastern prolongation through which the Port Hope and Peterborough railway runs, but west of that it is continuous throughout, except where the Thames river crosses it. It was not traced farther north than Clinton or Holmesville, Huron county.

Gradients of the shore lines.

Below this there are traces of another shore-line higher than the Iroquois. Its elevation was measured at several points, for example, at Myrtle station, Grand Trunk railway, where it is about 775 feet; at a point south of Richmond Hill, York county; south of Harrisburg

Junction, Grand Trunk railway; north of Brantford, and at Kingscourt Junction, Komoka and Sarnia branch, G. T. R. The elevations vary from 775 feet, at Myrtle, as stated, to 705 feet in its westward extension; but this shore line has not been traced in sufficient detail yet to enable me to generalize in regard to it. The gradient seems, however, to be greater in the eastern than in the flat country in the western part of the peninsula. The Iroquois beach below this has a still greater slope westward, that is, between the Trent river and Dundas, according to Spencer and Collman.

Differential movements of the land indicated.

The highest of the water-planes and shore lines referred to are, no doubt, the oldest, but even these must have been produced since the last glacial period, as they bear no traces of ice-action. When the 775-705 feet shore line was being formed, and still later, the Iroquois, the 892 feet one, as well as the 1,100-1,200 feet plateau, must have had an eastward or north-eastward slope. The 892 feet shore line however, strange as it may seem, has just about returned to its original horizontal position. The changes of level indicated by the several altitudes and gradients of all these shore lines, viewed in relation to each other, point to differential or east-and-west see-saw movements, which were much more complex than hitherto supposed. Further study of the phenomena is very desirable.

Clays, Sands, Gravels, etc.

Stratified deposits, clay, sand, etc.

Considerable information has been collected relating to the character and distribution of the clays, sands, silts, marls, etc. Besides the boulder-clays referred to on a previous page, the stratified clays and sands form the largest part of the surface deposits, occurring everywhere throughout the province, and the industries depending upon these materials are rapidly increasing in value and importance. The

Uses to which they are now being put.

manufacture of bricks and tiles is now carried on near most of the cities and towns, and no difficulty seems to be experienced in getting clay and sand suitable for this purpose. At most of the brickyards the surface clay and sand only are used, which burn into red bricks. But in the south-western part of the province large quantities of white or

Bricks and tiles.

cream-coloured bricks are made from the Erie clay, which underlies the clay above mentioned. The localities where the different kinds of clays and sands occur are so numerous that it is impossible to mention

Description by Dr. Bell in Geology of Canada, 1863.

them in this report. But they have been described in considerable detail by Dr. Robert Bell in the Geology of Canada, 1863, pp. 896-915. Sands and silts often form ridges and mounds upon the higher terraces between Manvers and Whitechurch townships. The detailed information collected during the past two seasons concerning the surface deposits

must be passed over in this summary, and await a more detailed report.

PEAT.

Peat.

A good deal of interest is taken at the present time in the manufacture of fuel from the peat bogs of Ontario. Experiments in drying and pressing the crude moss have been going on for a number of years and attempts made to produce a marketable article of fuel which would be cheap, of small bulk, and easily handled. Recently it appears that at three or four of the peat bogs at least, the efforts of those interested have been successful, while at others the methods devised are being tested and will probably be adopted. Briefly described, these methods are:—First, the draining of the bog; then air—and sun-drying the crude moss in the field until the quantity of moisture in it is reduced to 50 or 60 per cent or less; afterwards collecting and bringing it in to the peat works. These operations constitute what is called 'harvesting' the peat moss. When brought to the works it is either piled in heaps or stacks, or delivered into a machine called a 'breaker,' which breaks or cuts it into small particles to facilitate drying, after which it is carried to the drier by an endless belt and buckets. Several driers have been invented and tested, but the one known as Dobson's seems, so far, to have proved most serviceable in the drier peat mosses of Ontario. It is a hollow steel cylinder, 30 feet long and 3 feet in diameter, which is placed inside a brick furnace and mounted on an axle at a slight inclination from a horizontal position. Heat is applied under the higher end, the peat from the breaker being delivered into this end automatically from above. The drier is made to revolve slowly, and 'angle irons' inside, arranged at proper distances apart, lift and break up the peat still more as it is moved about inside the drier, until, by gravitation, it reaches the lower end of the cylinder. From the drier it passes, as a fine dust, into receptacles which convey it to the press. It is then dropped into the dies, of which there are eight on a revolving block, and is there subjected to a pressure in each of not less than 50 tons weight. By another movement of the press the block of pressed peat, or briquette, is forced out below and caught up by the buckets of an endless belt and carried to a storehouse or bin. At the Beaverton works, where operations seem to be well systematized, the whole series of processes, from the cutting of the peat in the field to its storage in the bin, costs only about 90 cents a ton. From twelve to fifteen tons of pressed peat are produced daily with only one drier. These works have been in operation for two years, and the peat briquettes find a ready sale at Beaverton and the nearest towns.

Methods of converting it into fuel, or briquettes.

Description of drying process.

Presses.

Beaverton peat works.

A peat bog situated about eight miles north of Stratford, contains 1,200 or 1,300 acres, and is known as the Stratford bog, or Huckleberry marsh. Here the manufacture of peat fuel has also been undertaken. The whole process of harvesting, drying and pressing the peat moss into briquettes is precisely similar to that of the Beaverton works, and so far as I could learn, is also proving a success. The plant is the same as that of the Beaverton Peat Fuel Company, and indeed, has been constructed from Mr. Alex. Dobson's patent.

Stratford bog.

The Welland peat bog is situated in Welland county, and contains 4,000 acres or more. It is now six or seven years since the company operating here (The Welland Peat Company) began the exploitation of this bog, and experiments in drying and pressing the moss, have meantime, passed through a number of stages. The preparation of moss litter was first tried, but eventually, this gave way to the manufacture of peat fuel. The experimental stage, seems now, however, to have been passed, and plant adapted to the special requirements of the peat moss has lately been installed. The character and condition of the peat are somewhat different from those of the Beaverton and Stratford bogs. The Welland moss is wetter and different methods have had to be employed in harvesting and depriving it of the moisture it contains. It has been shown by experiments made at other peat works, that the maximum amount of moisture left in peat after passing through the press, must not be more than 10 to 12 per cent, in order that the briquettes may not be brittle or break up readily. But it was found that passing the peat of the Welland bog through a 30-foot drier, once, did not reduce the quantity of moisture to this point. Hence, the company had to get a double or triple drying-cylinder, equal to about 90 feet of a straight drier, to effect that end. The difficulties encountered in the drying process having thus been overcome, three new driers were about being put in at the time of my visit, making four in all, with a capacity for producing 100 tons of pressed peat a day.

Welland bog.

Drying and compressing plant at Welland.

The peat of this bog has to be screened before it is put into the breaker as it contains roots of trees and shrubs. These roots are, however, used for fuel under the driers, instead of crude air-dried peat, as at Beaverton and Stratford.

Victoria Road peat work.

At Victoria Road, on the Trent Valley canal, about two miles north of Kirkfield, there is a peat bog of 110 acres, and here an attempt was made by the Trent Valley Peat Fuel Company to manufacture fuel on a large scale. Very extensive works were erected and operations carried on for two years or more, but owing to the difficulties met with in the drying process also, they were closed in 1902. The peat moss

is under water, and had, therefore, to be dredged, and the efforts which were made to remove a portion of the water it contained by pressure before conveying it to the driers, were not successful, and besides, were, I was informed, too expensive.

Another peat bog to the north of this, on higher ground, is much better situated as regards drainage and facilities for drying by the air or sun, and it is reported that the company above mentioned may commence operations there.

Rondeau bog.

The Rondeau peat bog is on the west side of Rondeau Harbour, Kent county. The surface of the moss is nearly on a level with that of Lake Erie, and at the time of my visit the pit from which the peat was being taken was flooded and operations had temporarily ceased.

Brockville peat.

A large peat bog lies three miles north of Brockville. Here the manufacture of peat fuel was undertaken, but the company was met by the usual difficulties in the drying and compressing processes, and had to close operations. The property, I am informed, has since been acquired by the Peat Industries, Limited, of Brantford, and their improved plant was to be installed at an early date and operations resumed. The bog is rather a wet one, the artificial channel which drains it apparently not having been cut deep enough.

Newington peat works.

Preparations for manufacturing peat fuel have also been commenced at Perth, Picton, Galt and other places, and the Dominion Peat Company of Brantford is about to begin the manufacture of fuel and coke from the moss of a large bog at Newington, Stormont county.

Bogs not yet utilized.

Other peat bogs were noted in different parts of Ontario, for example at Redmonds Pond, west of London, at Jacks lake, south of the mouth of Nottawasaga river, also in the basin of Balsam lake, and at the Mer Bleue, east of Ottawa. No attempts have yet been made to work these for fuel or moss litter.

Present methods of drying and pressing peat not capable of producing fuel in large quantities.

The question is often asked, can peat fuel be prepared by the present methods of drying and pressing it in sufficient quantities to enable the manufacturers to place it in the fuel markets of the country for general sale along with coal and wood. Hitherto this has not been done, and the limit of production seems to be reached when the nearest towns and villages are supplied. The great difficulties in regard to preparing it in large quantities lie in the preliminary air-drying or so-called 'harvesting' processes. In winter, as is well known, the bogs are frozen solid, so that it is impossible to obtain the crude peat then to carry on operations. Under these conditions, how can a

manufacturer get a supply sufficient to keep the driers and press running all the year round? The present method is to store up as much of the air—and sun-dried peat in the summer months as possible. But in wet summers this quantity must be limited, indeed, the managers of peat works inform me that, as a rule, they can only get about 100 days in the year to dry the crude peat in the field. It is evident therefore, that if, on account of a wet summer, or other causes a sufficient quantity of the raw material is not collected, the industry will be seriously hampered. However, matters are not so bad as may seem at first glance. Considerable quantities of the raw peat are usually stored. Moreover, it has been proved by experiment that it is not necessary to store air-dried peat under cover for winter use, if the moisture in it is reduced to 50 per cent or less. Stacking or piling it up in the open air is just as effective in keeping it dry, that is to say, it will remain in the same condition in regard to the contained moisture as when collected. Peat well dried by the air and sun does not usually contain more than from 20 to 40 per cent of moisture. Large heaps of air-dried peat were shown me at some of the bogs which had been exposed to the weather for a year or more. Openings made in these showed this peat to be as dry as when collected exeept 12 to 15 inches on the outside, which was the depth to which the rain had penetrated. From these facts it would seem that in order to have a sufficient supply of crude moss on hand to keep the driers and stamps of any of the peat works in operation the whole year round, it is necessary, first, to have a large drying area, and second, to employ a considerable number of men during the dry weather of summer for the outdoor operations. The air-drying process is the cheapest, and probably the most expeditious in the preliminary stage. At the Beaverton works the total cost up to the delivery of the raw peat at the breaker is reported to be only about 40 cents to the ton of pressed peat.

Only about 100 days in the year in which peat can be sun-dried.

Large drying areas necessary.

Costs of air drying process.

Peat briquettes.

Peat briquettes are impervious to the moisture of the atmosphere, if kept under cover, but if exposed to rain or snow they absorb water and swell up and burst. They have a calorific power of about three-fourths that of ordinary coal, while that of crude peat is about half that of coal, the accurate proportion being as 1 to 1·8.

Dead bogs.

The peat bogs or moors of Ontario consist, to a large extent, of dead peat, those parts which contain the living moss being limited and scattered. The growth and accumulation of peat here has, therefore, practically ended. The dead condition of these turbaries is due to several causes, some of which are not easy to explain, but the principal causes seem to be (1) the clearing away of the forests and the partial

dessication of the country surrounding the bogs ; (2) artificial draining and attempts at cultivation ; (3) fires overrunning them in dry seasons, &c. In consequence of these changes the quality of peat is more or less impaired. Dust and other mineral matters are more likely to get into it, especially near the border, when the peat is dead. Moreover, the lower part of the bog is then more liable to decompose, the fibre of the peat to become destroyed and pass into humus. Peat fuel manufactured from material of this kind, therefore, is not likely to be as clean and free from mineral matter as that obtained from green living bogs. Ordinary clean peat should not contain more than about five per cent of ash. The upper part of the Ontario bogs, that is the part from two to four or five feet below the surface, probably contains the best peat for fuel, and the centre of the bog will have cleaner moss than that at or near the margin.

Acknowledgements.

In closing I desire to thank Mr. Horace P. Chamberlain, general manager of the Imperial Oil Company, Sarnia, for a number of logs of wells sunk in Ontario, and Mr. Charles O. Stillman, general superintendent of the Sarnia Oil Refinery, for information courteously given. To Messrs. James Kerr, Petrolia, A. F. Hunter, M.A., Barrie, Wilson Irwin, Toronto, Alex. Dobson, Beaverton and William Carmichael, Collingwood, I am indebted for assistance and various acts of kindness.

The Algonquin Shore-line in Simcoe County, Ontario.

Mr. A. F. Hunter.

Area of Simcoe county.

Simcoe county covers 1,627 square miles, has a maximum length of 58 miles, and a greatest breadth of 52 miles. In this limited area, the ancient Algonquin shoreline has a lineal extent of some 450 miles. This great length is owing to its numerous windings around peninsulas, bays, islands and every other form of shoreline.

Origin of surface deposits.

It follows from this circumstance that more than half of the surface deposits of the county are the direct products of the Algonquin water, notwithstanding the fact that many other shore-lines are found here. No other physical agent was so potent in producing the present economic conditions of the county. For, in addition to the phenomena connected with existing parts of the ancient beach, there are very many wide tracts of boulders lying far out from the shore-line which were shoals during the existence of the Algonquin lake or sea, and they owe their denudation to this great water-body. Hence the Algonquin lake or sea has been the dominant factor in making the county's soils and deter-

mining its watercourses, and even in modifying the distribution of its flora and fauna.

Area of former land.

The contracted area of the dry land in what is now the county of Simcoe in Algonquin times was about 680 square miles, consisting chiefly of islands and crab-like peninsular forms. The remaining 947 square miles lay under water with the meandering shore-line of 450 miles. It is a singular fact that the 680 square miles thus unaffected is nearly all good soil, while the 947 square miles consist largely of sands and gravels, deposited on the bed of the lake. In most places the Algonquin deposits completely obliterate any glacial characteristics that might once have existed, but above the shore-line there are a few features that may be attributed by some geologists to glacial agency.

Former islands.

In the southern and western parts of the county, the Algonquin sea lay against the mainland. A group of large islands extended nearly from Lake Simcoe north-westward to Georgian bay. The largest island, which covered about 120 square miles, and included the chief part of the township of Oro, lay nearest Lake Simcoe; and in a general way the others diminished in size toward Georgian bay. The longer axis of this island group seems to follow an old escarpment which was closely parallel with that of the Blue mountains at the west side of the county, the islands being the portions which have escaped denudation. Some exposures of rocks occur along the Blue mountain escarpment, but none in the row of islands, the latter being heavily covered with drift. The general direction of the broken face of the old escarpment, which I shall call the north-easterly escarpment, as shown by the Algonquin shore-line along the islands, is north-west by west. That of the shore-line along the Blue mountain escarpment is north-west by north. Thus they are closely parallel with each other, but not exactly so.

The Algonquin lies about midway in elevation in a series of shore-lines, all of which are more or less definitely marked in this county. First, I will pass upward from this shore-line, taking it as the datum in my descriptions.

Other old beaches.

One of the most prominent features of the Algonquin beach is an upper strand, about 40 feet above the main cutting. This is observable for the most part where the land slopes very gradually; at places where the slope of the surface is steep near the shore line, its faint traces have been entirely obliterated by the strong action of the waters during the subsidence which followed. This appears to have been the starting level of the true Algonquin shore-line. Wherever the name Algonquin is used in this report, it refers to the Lower Algonquin beach, which is, in every respect, the more important.

Besides the markings at 40 feet above, there are others at 70 feet and again at 110 feet also above the principal shore line. All three become well marked shore-lines along the north-easterly (broken) escarpment, but along the face of the Blue mountain, I am unable to recall any but the markings at 40 feet, which I regard as a part of the Algonquin itself, or the earliest stage of it. The other two are probably somewhat local, appearing as they do along the more exposed places. All three are connected with phenomena due to the action of shore ice.

Shore line at 160 feet.

The next prominent shore-line above the Algonquin occurs at about 160 feet. Where it is well preserved it appears double, the two strands being separated by a space of about 15 feet. Its double character suggests possible tidal action. This 160 feet shore line has an oceanic aspect. It is not always distinctly defined, but is accompanied by evidence of much laving, and a broad, though sometimes eroded plain beneath it. Being much older than the Algonquin beach, it is not nearly so well preserved. One finds the Algonquin marked in ten places for one in which he finds the 160 feet shore line, but this difference may not be entirely due to the difference in age. The latter is easily traceable, however, by its broad water-levelled plain.

There is abundant evidence in the zone between the Algonquin and the 160 feet shore-line of a period of thick shore ice, such as might be produced by a sub-arctic climate like that of the present Great Bear lake, but there is no evidence within my range of observations of any land ice or other glacial features. The evidence of shore ice is furnished by the multitudes of ice-formed reefs to be seen in sheltered bays within the zone. The uppermost layer in those cliff exposures is usually a mixture of gravel, clay and pebbles, having a cemented character in most places. My observations led me to regard this mixture as debris from the deposits of shores immediately above the Algonquin, and I further consider the thick deposits of sand always underlying this material as the products of the strong shore-line at 160 feet. In one instance, viz., on the north half of lot 16, concession XII., Innisfil, I observed this thin cemented covering of boulder clay to dip with the slope of the hill in the side of which the exposure occurs.

Higher terraces.

The next shore-line is one about 230 feet above the Algonquin. This has a terrace even broader than that of the 160 feet shore-line, but its actual water-line is more indistinct. Indeed, the shore-lines become more extended and with a more oceanic aspect as one ascends the series. There are shore-lines at about 310 and about 410 feet above the Algonquin, in addition to those above referred to. The

altitudes of these are deduced from my observations on the 'Insular Tract' in North Simcoe. Similar high shore-lines occur up the sides of the Blue Mountain escarpment in the western part of the county, and they are probably at corresponding altitudes, but I have not attempted to correlate the two series, or rather the two parts of the same series, higher than the 160 feet shore-line, which is a conspicuous feature along both escarpments of the county.

Shore-lines below the Algonquin.

Returning to the Algonquin and passing downward from it, the first shore-line is found at about 60 feet below. The best markings of this shore are found along the north-easterly escarpment, but are occasionally met with in other parts of the county, though, as a rule, only faintly. This shore-line, or a counterpart of it within an inner basin, occurs a short distance south and west of Angus. The entire valley of the Nottawasaga river above this is devoid of shore-lines until the Algonquin is reached, and between the two there is a continuous plain. In connection with this shore-line, which I shall designate by the letter A for the sake of brevity, some beds resembling boulder-clay occur in protected places. Instances of these will be found mentioned in subsequent parts of this report.

The next shore-line beneath A is some 50 feet lower than the last mentioned, and is considerably stronger than A. I will designate it as B. The succeeding ones, C and D, are also strong. In fact, it might almost be said that this infra-Algonquin series, which has been called the Great Nipissing series by F. B. Taylor, increases in strength as we go downward from the Algonquin. The later members of the series are marked only against the north-easterly escarpment. Westward, near Collingwood, none but the first three are to be seen, the later ones having coalesced with the existing shore of Georgian bay.

I cannot assert positively how many shore-lines may exist in this infra-Algonquin series. There are at least five, and as you travel north-eastward, where the uplift raises the whole series higher above the present level of Georgian bay, new ones seem to make their appearance. The series ends in uncertainty.

Fresh-water shells.

Fresh-water shells begin to make their appearance with the shore-line B. They increase in abundance until we reach shore-line D, in connection with which great deposits of shell-marl occur in the flats of the Nottawasaga river toward its mouth. The great abundance of fresh-water shells at this stage of the subsidence suggests a much warmer climate than even our present meteorological conditions. Dr. Robert Bell has found similar evidence of a milder interval than the

present day in deposits on the north side of Lake Superior. (The Geological History of Lake Superior, Trans. Can. Inst., vol. VI., p. 54).

Ancient bays.

Along the Blue mountain escarpment, especially toward the head of the Georgian bay of Algonquin times, the shore-line has many bays and deep indentations; but along the north-easterly escarpment, especially at the northernmost islands, the outlines have a smooth rounded character which is quite noticeable when the contour of the shore-line is seen on a map. This difference, which is accompanied by a corresponding increase in the strength of the cuttings at the outermost places, seems to be entirely due to the greater exposure at the north to a more active sea. The difference is not traceable to uplift or deformation of the shore-line while the water body was cutting it, but almost, if not quite all, to the uplift in subsequent times. The markings at 40 feet above the Algonquin and the higher members of the infra-Algonquin series are quite parallel with the Algonquin itself, and show practically the same degree of uplift. They also show greater intensity along the north-easterly escarpment, and hence the whole phenomenon may be regarded as due fo greater exposure to the wave action. I have identified the Algonquin, east of Lake Simcoe, at Bolsover and other places in that neighbourhood, and it has an appearance resembling what it possesses in the more central parts of South Simcoe; hence I infer that the portions of it seen by me in Victoria county were amongst islands, where the action of the waves was more subdued.

Five periods.

In well developed examples of the Algonquin in Simcoe county, the main cutting is seen to be the result of the concentrated efforts of some five periods of intensity. In other words, the wave action was intermittent, as shown by the wave-built reefs of water-worn materials. Two such examples were noted in our survey of the shore-line in the township of Oro.

Uplift to the north-east.

The uplift or deformation of the Algonquin toward the north-east is quite considerable in this region. At Barrie the beach is 780 feet above the sea; at Silver creek, due north of Orillia town, distant 24 miles from Barrie in a straight line it is 875 feet. Along this line, therefore, the uplift attains 4 feet in a mile. Silver Creek is on the edge of the north-easterly escarpment. At Lisle, on the edge of the Blue mountain escarptment, its altitude is 750 feet. Lisle is distant from Barrie, 15 miles in a straight westerly course. Hence, along this line, which crosses the valley of the Nottawasaga river, the uplift is 2 feet to the mile.

Springs.

The old water-line of the Algonquin has a larger number of springs issuing along it than any other shore-line above or below it. This

feature led to the selection of the Algonquin cliff tops for the sites of many Huron Indian villages in the earlier days. Elsewhere I have dwelt more at length upon this circumstance, and upon the use of the ridges (morainic and other kinds) by the Indians for their forest trails.

Shell-marl.

Shell-marl deposits are conspicuously absent from the list of materials in the beds below the Algonquin shore-line. But, as above mentioned, thick deposits of this material occur in the deposits of some later shore-lines in this county. The action of a beach in making a deposit of shell-marl is to be seen on the present shore of Nottawasaga bay. The waves break up the shells into small fragments, but some escape whole and are thus found in the marl afterward.

Fossils.

Fossil fishes occur in Algonquin clays in the townships of Tay and Essa, and these cases will be found mentioned more particularly a few pages further on. They, however, did not come directly under my own observation, but I believe these instances constitute evidence that the Algonquin clay-beds are fossil-bearing. The sand deposits formed in shallower water than the clay can hardly be expected to retain any traces of fossils. Along the shore-line itself the intensity of the water action would be so great as to destroy shells and other dead organisms, if there had been any, and the coarse materials would not preserve them even if they had escaped destruction.

In artesian wells in this county, water does not rise above the Algonquin level; and there are no wells of this kind above the shore-line, so far as my experience goes. The case is different in other counties where wider bodies of the land of Algonquin times are to be found; but the land tracts of Simcoe county were too small to give any great force of water above this line.

NOTEWORTHY FEATURES ALONG THE ALGONQUIN SHORE-LINE.

Noteworthy features.

The Algonquin shore-line enters Simcoe county on lot 42, concession XII., Nottawasaga township and crosses the adjoining lots northward. Extensive boulder pavements are to be seen here, the finer materials from which the boulders have been separated and left, being found a few miles to the south-east. In general, the foot of the Blue Mountain escarpment corresponds with the Algonquin shore-line, more or less closely, and in some respects it is more conspicuous than any of the other shore-lines, above or below it.

Where it crosses Hurontario street or the eighth line of Nottawasaga, there are to be seen several ridges on lots 32 and 31. The shore-line

itself occurs southward in lot 31 near lot 30 on this line. At the crossing of the sixth line east, ridges and tracts of gravel are quite extensive, and the Batteau creek is very pebbly on lot 30 and for some distance above and below. The gravel has evidently been carried from the boulder tracts, six or seven miles to the north-west, as mentioned above. On this same (sixth) line southward from the crossing, for about two miles, including lot 27 and others south of it, the soil presents a much washed and flooded appearance, although there is good loamy farming land everywhere above an elevation of about 40 feet over the shore-line itself. The evidence furnished by this instructive place (on the 6th) is that the Algonquin lake or sea began its work about 40 feet above the main or final shore-line, and kept gradually settling down, leaving a zone of land for 40 feet above with a washed appearance. This feature is also seen at many other places, including an example on the ninth line of Vespra, but in the latter instance, there may have been some tumbling down of the final cutting, the 40 feet marking having been eroded away. Washed soils.

On the No. 24 side-road in concession IV., the shore-line is represented by a high gravel ridge, which is traversed by a stream. That part of the ridge lying north of the stream is boldly prominent and resembles a ridge of apparently similar formation in lot 9, concession XI., township of Tiny. Further lakeward than the gravel, viz., around the town of Stayner, there are thick deposits of sand whose origin has obviously been in the Algonquin water.

Passing now into Sunnidale, a prominent projection known locally as 'Cornhill,' protrudes fully two miles into the Algonquin lake-bed and far beyond the general line of the Blue Mountain escarpment. The land upon Cornhill is good, hence its name ; but that on the flat ground around it is poor, having been washed by the ancient lake. The lake at the Algonquin level came very nearly making an island of Cornhill ; a shore-line 70 feet above it did so. A strong and well preserved cutting of the Algonquin occurs along the outer or lakeward edge of Cornhill ; this cutting having for its most easterly reach the boundary between lots 4 and 5, concession V. Up to this point in our itinerary, this is the best developed cutting we have encountered, and it is the strongest example I have observed anywhere from the place of beginning, although it cannot be compared for strength with some cuttings along the insular 'escarpment' in the north-easterly part of the county, made by the Algonquin waters. Cornhill.

The crests or ridges on Cornhill and in its immediate neighbourhood at this part of the escarpment, whether they are the results of glacial

phenomena or not, have a north-west and south-east direction, and in this respect they are exceptional, or differ from other ridges almost everywhere throughout the county. As they now appear on Cornhill their course suggests that they have been cut away to this shape. Through Nottawasaga, township up to this point the ridges have usually a north-east direction, so far as any order can be made out; and four miles south of Cornhill, at Banda, they again run north-east.

The cutting at the apex of Cornhill is the starting point of the extensive Pine plains, which will be referred to further on. On the cross road between lots 6 and 7, concession IV., Sunnidale, a little way north of the road to New Lowell, there are surface deposits of the highly coloured red sand with continuous deposits of whitish marl or other chalky substance in a powdered condition. This is a short half mile from the cutting and about 60 feet below the shore-line, the usual depth at which such deposits are found.

Along the south side of the Cornhill projection, a deep recess runs into Nottawasaga, entering that township in lot 9, concession I. This recess contains a large Algonquin island of some 2,000 acres in extent. On the side of this island facing the south-west is a very strong cutting which extends four miles from near Glencairn to a point south-west of Cashtown, where the island ends. Abundant gravel beds lie beneath the surface.

Avening and Glencairn.

The district around Avening and Glencairn is several feet lower than the Algonquin beach and the Pine plains in front of it, and may have contained a small inland lake for some time after the period of the Algonquin; this tract is now drained by Mad river. Good fertile soil is found in the supposed former lake bed. Mad river has cut a canyon through the Pine plains. In lot 33, concessions II. and III. Tosorontio, the canyon contains terraces, showing an intermittent character in its excavation. Where the branch of the Mad river that comes out of Mulmur, crosses the 7th line of the township in lot 28, there is a distinct terrace 40 feet above the Algonquin, in the canyon or valley.

On the south-west side of this recess in the escarpment, *i.e.* S.W. of Avening, a tract of very high ground juts to the east, and is visible, standing out by itself, for a long way. Otherwise described, the Avening recess is bounded on the S.W. by projecting high ground, immediately south of which is another recess in which Randwick and other places in Mulmur, are situated. But the Randwick recess does not contain any Algonquin bay, although the shore-line about 160 feet above it, extends far into this recess, and makes some islands lying within it.

South of the Randwick recess, a projection known locally as the 'Oak Ridges' runs out from Mulmur, beyond the 2nd line of Tosorontio. Its margin, as just defined, is the 160 feet shore-line, and the Algonquin itself, is some two miles farther east. The name of this projection is derived from the timber which prevailed upon it, but which has since been removed, yet countless young oak trees are now to be seen on the high ground. The southern faces of the Oak ridges, are very steep and sandy, the material having been washed over by a strong and higher water, whose surface would be some 230 feet above the Algonquin. Another conspicuous recess along the south of the Oak ridges, runs far into Mulmur. Oak Ridges.

THE PINE PLAINS.

Starting from the apex of Cornhill, in Sunnidale, the Pine plains extend in a S.E. direction, and cover portions of three townships. In shape, the plains have the outline of a beaver tail with a length of ten miles, and a breadth of seven miles at the widest part, and form an immense sand-pit of the Algonquin, with perhaps a little subsequent alteration by winds. Yet wind-blown sand is not commonly seen over this tract. The Pine plains were covered originally with a red pine forest, which was removed many years ago, and the land being too poor to cultivate, they are again thickly covered with a second growth of that timber. Pine plains.

Crossing the Pine plains along the town-line between Sunnidale and Tosorontio, we find the land unoccupied and unfenced from the end of the line near Glencairn, for some miles eastward along the Tosorontio side, or as far as the 7th line of that township. On the Sunnidale side there is a conspicuous range of sandhills, about half a mile from the road and almost parallel with it. These sand hillocks run through concession I, Sunnidale, and all the way through lots 6 to 11, beyond which the range passes out of Sunnidale at about lot 12, into Tosorontio at lot 33, concession VI. In the former township a few settlers have located here and there along the town-line. This range of sandhills is doubtless the main axis of the whole spit from Cornhill, though it seems to have been deflected a little to the leeward side of that locality and comes more directly, in appearance, from the large island near Cashtown. This axis of sand dunes is the part of the plains that has a more wind-blown appearance than any other, and in this respect it resembles the much higher range of sand dunes near the mouth of Nottawasaga river, the latter being the product of a lower strong shore-line. Crossing the Plains by the road from Lisle to Angus, we Sandy lands and ridges.

find along the eastern edge of the Plains, near the latter, lake terraces, made by shore-lines lower than the Algonquin.

Travelling southward from Angus, the sand continues until the West Essa ridge is reached, six miles distant. For about a mile after leaving Angus, the surface of the land looks as if the sand had been drifted by winds.

Shells at Angus.

No shells or other organic remains have been found during my excursions or observations on these Plains. The shells collected by Prof. Chapman at Angus (Geology of Canada, 1863, p. 910), and by Prof. Coleman (Trans., Canadian Institute, vol. VI., 1899, p. 40), were taken from the lake beds of lower and more recent bodies of water than the Algonquin, whose shore-lines are mentioned in the preceding paragraph.

UPPER CANYON OF THE NOTTAWASAGA RIVER.

Canyon in the Algonquin.

Through Tecumseth and Essa the Nottawasaga river, for 20 miles along its course, has cut a canyon in the deposits made by the Algonquin, thus affording good sections. The silted plain—the bed of the ancient Georgian bay near its head—has been given different names in different parts; but the Essa Flats is the term applied to the greater part of the land through which this canyon has been made. Usually, the course of this canyon is too far from the shore-line itself to contain any stones or gravel; at any rate, I have observed nothing but stratified sands and clays at the places mentioned below. The superficial deposit is almost always a reddish sand. Beneath this, to a depth of several feet, are beds of a whitish or gray sand, which gradually becomes finer as one descends through the layers. This finally passes into clay, and in the lower parts of the canyon it becomes a stiff blue clay. The latter is impervious to water, so that along the low parts in the canyon, water oozes from the layers of clay and trickles down to the river. Of the many beds exhibited in the sides of the canyon, each layer may indicate a year's growth of the deposit, the horizontal planes of cleavage showing the effects of winter or ice-covered periods. The entire deposition of material, passing from fine blue clay at the bottom to coarse sand at the top, shows unmistakably a falling water surface.

Depths of canyon.

At the river bridge, on lot 5, concession VI., Essa, the canyon is 60 feet deep. There is a projection or shelf on both sides of the canyon, which may be seen in lots 6 and 7, sixth line, Essa. On the No. 10 side road, Essa, which the river crosses in its west half, concession

V., the canyon is again about 60 feet in depth. There is a terrace in it 35 feet above the river, or about 25 feet below the top of the canyon. A branch that flows into the river near this point has also cut a canyon to a depth similar to that of the river. At the No. 15 sideroad, which crosses the river in the eastern half of concession V., the layers are finely exhibited. At the No. 25 sideroad there is a terrace at 20 feet below the top of the canyon. The river itself runs in a 15-feet channel at the bottom; that is, a canyon within a canyon. It would thus appear that a second terrace is forming. The canyon here is altogether about 75 feet deep to the surface of the river. This is near the deepest part of the cutting. Before the next sideroad is reached below, the land drops many feet and newer lake shores are marked against the face of the cutting.

Algonquin features on the Blue mountain.

Resuming our journey along the Blue Mountain escarpment, which this digression to examine the upper canyon had interrupted, the next prominent feature we reach is the West Essa ridge. It formed a long peninsula during the time of the lower or main Algonquin waters, projecting seven or eight miles outward from the line of the escarpment. The isthmus lying behind the ridge and connecting it with the escarpment consists of low land, but the lower Algonquin water line does not pass south between the ridge and the higher hills in Mulmur, although the upper Algonquin, at 40 feet above the lower, appears to do so. This West Essa ridge divides the wide valley that contained the ancient head of Georgian bay into two parts, about equal in breadth, although in length they differ greatly. The village of Everett is situated at the head of the western or shorter arm, just as Angus lies at the head of the lower or Great Nipissing series of shores.

Fossils.

Small ridges or corrugations, with a north-west and south-east direction, occur on this West Essa ridge at lot 10, fourth line, Essa. These resemble the ridges of Cornhill and the Oak ridges in having this exceptional direction, viz: jutting up the valley, as if forced into this shape by ice. The adjacent flat formed below the Algonquin level has already been referred to under the head of the upper canyon. There is evidence that these wide tracts of ground, silted up by the Algonquin water are fossil-bearing. About the year 1898, some fossil unios, fish bones and pieces of wood or bone were found while digging a well on the Agnew farm, east half of lot 4, concession 3, Essa.

Ancient islands.

Along the east edge of this narrow part of the ancient Georgian bay, the Algonquin made a row or chain of some half dozen islands. They stood near the eastern shore of the water and extended from

Egbert in Essa southward as far as Thompsonville in Tecumseth. One or two at the north end of the chain were cut off from the mainland by only the upper or high water Algonquin.

Projections.

Another projection extends out of Adjala, a short way into concessions 12, 13 and 14 of Tecumseth. Between this projection and the last (the West Essa ridge) a deep recess runs into the face of the escarpment, with an island at its entrance. This spur into Tecumseth shows much erosion on its north side and much filling on the south side. Along the town line, between Adjala and Tecumseth, opposite the 12th and 13th concessions of the latter, the hills are covered with a deposit of sand for 40 feet and more above the lower Algonquin. On the same town line, from the 11th to the 12th line of Tecumseth, wave-built sand ridges, a mile in extent, occur. This chain of ridges looks like the remains of a sand spit issuing from the corner of the above-mentioned spur of high land. But the Nottawasaga river, which runs close to the spur, seems to have cut away that part of the spit nearest the land from which it was derived. A long arm passes down the south side of this spur and runs far into Adjala. It is known as the Adjala Swamp, and the lowest Algonquin shore line is well marked along the sides of this swamp and entirely around it. A very strong example of the main Algonquin cutting occurs in lot 22, sixth line, Adjala, although this is far inland.

Skeleton of a mammoth.

On the Haffey lot, west half lot 14, concession VI, Adjala, J. Henry Peck of Stanley, N.Y., found, in 1887, parts of the skeleton of a mammoth. This is the only instance known to me of mammoth bones having been found in the Georgian Bay basin. One of the molars is in Elmira College, N.Y. The other bones are in the Geological Museum of Lafayette College, Easton, Pa.

At this southern extremity of the ancient Georgian bay, the other bifurcation passes to the north-east for a long distance through Tecumseh, West Gwillimbury and Innisfil. The ridges on the land bordering this long sweep, commencing at Bailey's creek in Adjala and passing along both sides of it, are regularly disposed toward the north-east.

In Tecumseh and Adjala.

At Beeton on No. 10 sideroad, another recess occurs occupied by a considerable stream, running to the south-west. In this vicinity, and through Tecumseth generally, and in part of Adjala, the upper Algonquin, at 40 feet above the lower, is a strong shore-line, and the land in the zone between the two shore-lines shows a large amount of washing and flooding. In the time of the upper Algonquin level of 40 feet above the main Algonquin, the Georgian bay had a much further exten-

sion southward in many places hereabout, than during the latter. Where the No. 15 sideroad crosses the main Algonquin, there is a well developed water-cutting a few rods south of the ninth line. A mile south of this much of the land was washed by the 40 feet higher Algonquin.

West Gwillimbury.

Farther east, at No. 5 sideroad, West Gwillimbury, on the north half of lot 5, concession XII, the Algonquin is a wave-built shore. Sand-blown reefs also occur here. A curious little stack-like island occurs in lot 5, concession XII. The Hamilton Branch Railway follows the Algonquin beach for two or three miles, through Tecumseth. A shore-line is visible in a narrow ravine at No. 5 sideroad, third line, Innisfil, and it also occurs on the north half of lot 6 in concession II. At the latter place, it is so well marked, with a much washed plateau or water-plain beneath it, that its identity with the Algonquin high-water (40 feet) cannot be mistaken. Looking north-east from the second line, this water-plain is so strong throughout lots 7 and 8 that it is clearly seen to be the early or upper stages of the Algonquin. Another similar water-plain, with gently rolling surface, occurs in lot 11, concession V.

Bars of sand.

There is a distinct bar, higher than the main Algonquin, across the valley of Bear creek, near the fourth line, Innisfil. This bar crosses the entire valley, with the exception of an outlet or break of 40 rods at the west side. But the streams do not now go through this outlet, having made another breach farther east. This bar shows a perturbation of some kind in the rate of subsidence of the Algonquin waters. In fact, the bed of this entire arm, some 20 miles in length, all silted up to within a few feet of the main Algonquin, would amply repay a more detailed study than I have been able heretofore to give it, and would show the phenomena of the subsidence, better than many features in other parts of its course.

Another low bar across this valley at the north half of lot 12, concession V, Innisfil, is one of importance, as it is the watershed of the stream flowing north and south. Hewson's or Beaver creek flowed northward through this valley into Kempenfeldt bay, but the Algonquin shore-line did not pass through it, although the 40 feet one may have done so. In any case, the bed of this brook was flooded land in Algonquin times, even if its altitude should prove to be a few feet higher than the main or lower shore-line. This flat, like others, shows a record of the subsiding stages of the Algonquin.

The Colwell and Barrie channel.

Returning now to the channel that divides the mainland in South Simcoe from the archipelago in North Simcoe—the Colwell and Barrie

channel—where we left it some time ago, we find that along the south side of this channel the Algonquin is chiefly wave-built and is not now conspicuous, as the sand of which it is formed is loose and changeable. The first hill south of Allandale is a sand spit, except at its base. It is perhaps a little wind-blown, especially toward the top. Eastward from Allandale, there is an extensive deposit of gravel lying across the recess now occupied by Whiskey creek. The Northern Railway Company used these gravel beds as ballast for many years. The creek itself has cut a canyon through the deposits to a depth of some 50 feet. Similar canyons have been cut farther east by Hewson's or Beaver creek, and by Hewitt's creek, both of which flow northward into Kempenfeldt bay.

Most easterly extension of the Algonquin.

The most easterly extension of the Algonquin in this part of the county, viz., near Big Bay Point, is not so sharp a projection as the present shore of Lake Simcoe, but there is evidence that a considerable part of the old promontory was crowded away by the Algonquin water which being larger was much more active than the present Lake Simcoe. Along the south side of Kempenfeldt bay, the Algonquin is a cut-terrace most of the way.

Southward, at the seventh line, a little north and west of Nantyr, a well marked example of the 40 feet higher or upper Algonquin is seen. In a few places immediately south of this, the shore-line next above the main Algonquin passed through channels into the long arm of Bear creek, westward. In one of these cross-channels south of Churchill, in the third concession, many ice reefs may be seen on lot 16, looking as if small glaciers had lain in the valley and left miniature moraines.

Bradford.

The Northern Railway (a branch of the G. T. R.) follows the Algonquin beach for 12 miles northward from Bradford. Another long arm extends several miles southwest from Bradford, and is drained by the Holland river. This arm is much silted up, tha upper deposits being the reddish sand so peculiar to the Algonquin lake bed. The Algonquin beach leaves Simcoe county in this arm, but it may be observed that through the northern part of York county it makes a series of long arms like those in Simcoe county. This will conclude our survey of the shore-line in this direction.

THE INSULAR TRACT IN NORTH SIMCOE.

Archipelago in North Simcoe.

The Algonquin lake in North Simcoe contained an archipelago of large islands. We shall make a tour around this island group, beginning at Barrie and passing west, then north.

In a sand pit on Anne street, Barrie, there are waterlaid sand deposits, for fully 30 feet above the Algonquin, with apparently ripple marks in the sand layers. These deposits are probably due to the upper Algonquin, some faint traces of which appear on the surface in the neighborhood, a little higher up than the deposits. When sinking artesian wells in this town, which are readily had anywhere below the Algonquin level, the same story is always told by the materials passed through. These are coarsest at the top and shade into finer, as one descends, until at a certain depth, varying according to locality, but 68 feet at the town waterworks, the finest clay ends. This order indicates a falling water surface in which the materials were laid down, in accordance with the rule furnished by common experience.

Dividing channel.

At the west end of the channel that divides the Algonquin mainland in South Simcoe, from the above insular tract in North Simcoe, a great spit of gravel shading into sand, runs out from the shore-line where it bends northward at the 12th line of Vespra. This spit runs southward as far as Colwell station, and it is commonly known as the Colwell spit. In the low ground a little east of the spit, some red sand or marl is found interlaid with layers of grey marl. West of the spit the land remains high, nearly level with the top of the spit. The railway company (G.T.R.) has a large gravel pit in these beds.

Vespra.

From this place northward through Vespra, then eastward, there is a continuous cutting some seven miles in length. This cutting continues to increase in depth all the way from near Colwell, until at or near the 9th line of Vespra it attains its maximum. Here it is a little more than 200 feet in height above the terrace at its base, and as steep as its clayey materials will permit. It would be difficult to find among shore lines, ancient or existing, a finer example of shore cutting. It faces the north-west, and evidently received the full force of the Algonquin lake or sea from that direction, the sweep being unbroken from beyond Port Arthur on the present Lake Superior to this point.

Great sweep of water.

The materials dragged down from the cliff by the active shore-line have been chiefly deposited under the old waterline in an immense filling. This has a width of half a mile or upwards in a few places. The cutting has been so extensive that all the shore-lines immediately above the Algonquin have been completely worn away. But in lot 15, concession VIII., Vespra, at the edge of an Algonquin bay, about half-way up the cliff, or rather more, a fragment of a strong lake terrace is to be seen at about 160 feet above this shore-line. It is quite conspicuous, as it enters the bay, but further outward it is completely worn off.

Midhurst. Eastward from this locality plains extend for a few miles, similar to the Pine plains in Sunnidale and Essa, but smaller. These are situated chiefly in the Vth and VIIth concessions. Their formation is gravelly, and a road leads along their highest crest from Munro's creek to Midhurst, a distance of about two miles. The source from which this extensive deposit of Algonquin materials was taken was evidently the high cutting farther west. Some prominent sand dunes are to be seen in concession IV on lots 14 and 15, the materials of which have evidently been drawn from the same source, but being finer they have been carried farther. An exposure in Algonquin deposits on lot 10, seventh line of Vespra, shows a marly substance interstratified with sands. These deposits are Algonquin materials washed to leeward from the top of a hill north-west of the place.

Willow creek. The lower or main Algonquin beach extends a long way up the valley of Willow creek into Oro township, and the upper or 40-foot beach much farther. High ground bounds the east side of the Willow creek in Vespra, and against this the Algonquin water made a cut-terrace all the way. This extends northward and eastward as far as the lot 30 sideroad in concession II. A gravel spit is thrown from this across the opening into another bay eastward.

Near Craighurst on the Penetanguishene road, the land has a washed and levelled character for many feet above the main Algonquin, as high up as the 40 feet shore-line. It resembles some examples in the south and west of the county where the lake is better developed than it usually is in the 'Insular Tract' of North Simcoe. The steepness of the hillsides appears to be the cause of the difference.

Various ancient islands. The south-west end of the first large island to the left comes into the north side of Vespra, and presents some interesting features. In the east half of lot 2, concession VI, the shore-line has diffuse gravel spits or deposits. Crossing over to the other side of this island's extremity, on the townline between Flos and Vespra, on lot 8, concession I, Flos, there is a desert of sand dunes. But the main Algonquin, a little further west, is quite distinguishable by its water-bearing character on lot 9.

From the extremity of the island farther east, there runs to this place a spur, which the Algonquin did not completely wash away, but made breaches through it. This chain of remaining fragments is higher than the main Algonquin, which is clearly marked along the south face of the broken spur. Its boulder belt is quite wide and at 60 feet lower, there is a deposit of the usual red sand. The latter is on the sloping

land southward. This worn chain extends through lot 2, concession VI, and the shore-line itself runs westward a few rods into lot 2, concession VII.

Township of Flos.

Following the west shore of this island northward into Flos, a break is found in the island in the IIIrd concession. At this place it is divided into two parts by the upper Algonquin, but not by the lower. Here, the upper went through lots 1, 2 and 3, concession III, Flos, and a resulting sand plain, showing much flooding, passes through these lots. The south edge of this channel was near the third line, and the north edge near the fourth line. A little to the north-west from the western entrance to this channel, viz., half a mile north of Fergusonvale, there are deposits of the red sand at about the usual interval of 60 feet below the lower beach.

Along the fifth line, running far into the ridge of high land on the northern part of the island, there is a gully or deep recess extending as far east as the Base Line, and containing the upper Algonquin. Immediately north, there is a conspicuous feature of the shore-line, in lot 4, concession V, in the shape of a prominent nose or headland extending further west than the general course of the shore-line. Its sides are bold and cliff-like. There was a submerged bar or low ridge running out from the last mentioned headland, which at the present time appears to form a watershed between the drainage to the Nottawasaga river and that to the Wye. The bar is to be found on lots 3 and 4, concession V, Flos.

Features formerly submerged.

In the more westerly parts of Flos, some submerged features of the shore-line are worthy of our attention There is a considerable train of boulders, running for about two miles through lots 12, 13, 14 and 15, concession III, Flos, in a north-easterly direction, the usual course of the ridges in this county. On close inspection, this train is seen to be the top of a former ridge, which was washed over by the Algonquin. The ridge, as it now stands, is a few feet below the Algonquin water-line. South-eastward from this ridge, heavy sand deposits are to be seen, which were evidently worn off its summit by the Algonquin water. Through these deposits, Marle creek has cut a considerable canyon.

Ridges.

There is another, though less prominent ridge of boulders mixed with clay, on lots 15 and 16, concession IV, Flos, which also runs to the north-east. The same low ridge, with its water-holding clay-beds mixed with some boulders, is also observable on another road, viz., on the north half of lot 17, concession III. This was evidently the crest of another ridge, the stoniest part of it having been the main crest in

Algonquin times. South-eastward from the crest, the usual sand deposits are to be seen. To the north-west, the materials are first a fine sand, which soon shades into clay, the land sloping gently toward the north-west. Another stony crest is seen on the north half of lot 15, concession VI, near Crossland, from which the land again slopes gently north-westward.

Bouldery crests.

The bouldery crests that we have just been passing in review are evidently the highest parts of a considerable ridge running through this westerly part of Flos, but the Algonquin waters had planed off all the irregularities of its surface. A little to the eastward of the crest above mentioned, I observed the deposits of red sand on the eighth line, opposite lots 8 and 9, situated at the usual depth of 60 feet below the waterline of the main Algonquin beach. In some respects this water-planed ridge through western Flos is a continuation of one running through the township of Sunnidale, which has the same altitude as the Flos part of it, viz., within a few feet of the Algonquin shore-line. The Minesing hill in Vespra also comes under this class of phenomena. It has a boulder train a little south of Minesing village, eastward from which, about a mile, there are immense deposits of gravel, carried out of the crest and thrown over the leeward side of the shoal, while the ridge was actually in the Algonquin water. The last mentioned gravel deposits are crossed on the road from Minesing village to the station. All these crests in Sunnidale, Flos and Vespra, and some in Tiny, as we shall presently see, show the enormous force of the Algonquin lake in washing off the tops of so many shoals, and the large amount of work done by that body of water in the transportation of materials.

Minesing hill.

Question as to ice-covered surface.

On water-worn ground like that we have just been considering, the country assumes a very gently rolling aspect, and in some places it becomes nearly a dead level. No sharp glacial features are left on land that has been washed over by so powerful a physical agent as the Algonquin lake, but many phenomena show that the Algonquin was followed, as well as preceeded, by an ice-covered surface, but at the time of the greatest action, and the cutting of the enormous shore-line itself, the surface was tolerably free, at least from ice of a thickness great enough to leave many enduring marks.

Ridge with boulders.

On the No. 18 sideroad, half-way across the IVth concession, Tiny, there is another washed ridge with a crest of boulders. Northward on the same road, half a mile, at the crossing of the 5th line, there is a sand-plain with small sand dunes from another washed crest further northward. Another series of washed crests occurs around St. Patrick.

This is the top of another ridge, distinct from those I have described, and also distinct from the high Algonquin island a little eastward, known as the 'Mountain.' As one passes north on the No. 13 sideroad, he first encounters the washed boulder trains half-way across the VIIIth concession, and they continue northward for four miles, with but two interruptions. The first stony tract continues north for two miles, viz., into the Xth concession. Afterward, a continuation runs north of the eleventh line and there is another boulder-crowned ridge between the eleventh and twelfth lines, the stony pavement continuing northward of LeFaive's School on lot 13, concession XII. These boulder trains run in the usual direction, viz., north-east. They were evidently shoals in Algonquin times. The boulders cease altogether, half way-north in the XIIth concession, and there the sand begins.

A high gravel ridge lying some distance off the 'Mountain,' from which it is separated by Lannigan's lake, begins on lot 9, concession II, and runs north-east. It looks like a large spit; at any rate, the materials of which it is formed are lacustrine, not glacial, and they probably came from the boulder tracts toward the south-west that we have been considering, rather than from the 'Mountain.'

The 'Mountain' was a high island in Algonquin times. There are boulder pavements around the greater part of it, especially along the south and east sides, where the boulder belt is broad. There is a steep descent or cutting of nearly 250 feet at Bateson's, on the north side, through lot 108, concession II. The 'Mountain.'

We come now to the three large outer islands of Algonquin times, and it would be hard to find more interesting features than these in connection with ancient lake phenomena. Like the 'Mountain' just mentioned, they are all encircled almost completely by cuttings. These cuttings attain a remarkable height in some places; along the S. E. face of the Randolph ridge, the most southerly of the three, a cutting has a precipitous height of about a hundred feet, the slope being as steep as the clayey materials will admit. Still further, the outlines of all of them have a smooth, rounded character when correctly delineated on a map, (i.e. the protuberances of land were all worn off), as compared with the shore-line in other places, where bays and projecting points of land are common. Three outer islands.

Along the south side of the Randolph ridge, there is a broad shelf made by the shore-line. Vent's road, deflected to join with the thirteenth line, passes along this shelf and affords a good view of the 'lake-cliff.' On No. 13 sideroad, in the north half of concession XIII, the strong

cutting has beneath it a boulder pavement running half a mile south to where the sand beds occur.

Westernmost island.

The westernmost of the three islands mentioned above extends for some distance north of Ste. Croix, and I will call it the Ste. Croix ridge. It is a little more than a mile in length. There is a strong terrace around the whole of the island, and immediately west of Ste. Croix, on the 18th line, the boulder pavement is very extensive. One cannot witness this phenomenon without being struck by the enormous amount of lake shore action that was necessary to form this boulder tract. South of Ste. Croix the boulders extend for half a mile, i.e., half way across concession XVII. At the north end of the Ste. Croix ridge, on lot 18, concession XX, there are sand reefs and boulder pavements.

Effects of currents.

The three large islands just mentioned lie, with respect to each other, at the corners of a triangle. The intervening space partly inclosed by them contains a network of immense sand bars, formed by the currents and counter currents passing through the group. This is a very interesting phenomenon in connection with a study of the circulation of currents amidst islands, and the formation of sandbars. These bars all have lengths of two or three miles, according to their positions. One runs from the north-east corner of the Randolph ridge toward the little island lying off the most northerly of the large ones. The course of this bar is almost due north and south. At the corner of the seventeenth line and the No. 8 sideroad it makes an extensive sand plain. Another runs from the same extremity of the Randolph ridge in a north-westerly direction, towards the centre of the space between the islands. This crosses the seventeenth line at the boundary between lots 12 and 13. On the same line, at the boundary between lots 15 and 16, where a by-road leaves it for Thunder Bay, the summit of another bar or watershed is found, which has passed diagonally through lot 17 from the Ste. Croix ridge. Two bars or divides join here, namely, the one just mentioned, which continues south-east to the Randolph ridge, and another from the extremity of the large island to the north-east.

Horseshoe island.

An Algonquin island in the township of Tay presents some interesting features. In shape it is not unlike a horseshoe, and it incloses a marsh of about 75 acres in lot 86, concessions I and II. An Algonquin spit extends across the open side of the shoe, and it doubtless shut off in this pocket a small extinct lake. The Algonquin beach is a strong shore-line within this bay, on lot 87, concession I. The north-east face of the horseshoe island was much washed off by the Algonquin waters. The resulting tract of stony ground near Elliott's Corners has an extent of two miles, and is quite swampy, although covered with a pavement of boulders.

The next two islands, southward, lie close together. The channel between them is now occupied by a branch of the Hogg river, the course of which, as well as the channel, is almost due north and south. The north end is the wider of the two. Across this end there is a gravel spit and wave-built formations extending for the two miles by which the islands are separated. The gravel spit is in lot 3, concession III, Tay, and it is cut through by the Hogg river. Two islands.

Into the westerly of the two islands last mentioned, which is kidney-shaped, a bay of the Algonquin runs inland near Waverley, opening toward the north. This bay or pocket extends across the boundary of Tay into Medonte, on lots 75 and 74. The shore-line it contains appears to be the 40 feet Algonquin. The townline crosses the sandy bed of this bay, and through the bed run streams at some seasons of the year, but they are dry in midsummer. Northward the plateau of this bed soon drops about 50 ? feet to the lowest strands of the Algonquin at Dawe's creek.

Off the north-east point of the large Algonquin island, the most easterly of the two just considered, there is an extensive patch of boulders, viz., on lots 5 and 6, concessions VI and VII, Tay. The denudation of earlier formations here was enormous. Similar tracts of denuded boulders lie at the north-east of the next large island to the eastward of the last. In fact, the sides of the islands exposed to the north-east all show an immense force of the waves coming from that direction. This is true along the whole line of this row of large islands, where they face the north-east. Great denudation.

The last named island, which I have called the Rosemount ridge in my archæological reports of these townships, has a total length of 12 miles. On this island, along the Xth concession of Medonte, lots 17 to 20, the ground everywhere above the Algonquin, as high up as the 110 feet shore-line, is very much washed, and there are some sandy tracts, perhaps the result of the washing, as elsewhere. At the south-west extremity of this large island, a spit issues from it in the 1st concession of Medonte, about lot 48 or 49. It consists of gravel, nearest the ridge, and gradually shades into sand. The Sturgeon river makes its way through the sandy part of this spit. Some sandy hillocks are to be seen west of the river. Lying off this large island in the Coldwater river valley a small island of some 200 acres is quite prominent, chiefly in the VIIIth concession. Rosemount ridge.

The next in order, Algonquin Island, which is by far the largest of the whole group, covering some 120 square miles or more, is a complex congeries of ridges. At the N.E. extremity of this large island, near Largest island.

the village of Warminster, a very strong cutting is found along the north edge of the ridge, through lot 10 in the XIth, XIIth, XIIIth and XIVth concessions of Medonte. It passes into the township of North Orillia in lot 9.

Bays in the large island.

Near Coulson, a considerable bay of the Algonquin lake runs some distance south into the large island. The most southerly reaches of this bay are occupied by the upper Algonquin at about 40 feet above the main Algonquin beach. The upper one here has the same character as in other parts of the county, being the general limit to which the washing extended. An enormous spit of the main Algonquin occurs on the northern part of lot 4, east half of concession VII., Medonte. It juts out from the high ground at the east side, along the face of which there is a great cutting. The spit runs nearly across the mouth of the bay just mentioned. Immense sand plains occur here in the old bed of the Algonquin lake, extending from the vicinity of this spit to the small island above mentioned.

Another bay runs south along the island between concessions III and IV, into Oro township. At the west side of the entrance to this bay, in the east half of lot 2, concession III., Medonte, two shore-lines are visible at 40 feet and 70 feet above the lower or main Algonquin. A little distance westward the main Algonquin emerges from beneath the debris and becomes, as usual, marshy along its course, with very strong springs issuing here at its water-line.

Strongly marked shore-lines.

On the second line in both North and South Orillia, and westward of Marchmont the higher shore-line at 40 feet above the lower, and even the one at 70 feet, are strong, and show a large amount of wave action, like all the shore-lines along the north-eastern faces of these islands. An example of great washing action, leaving a gravel hill-top, occurs a few rods east of Marchmont village on the crossroad. Altogether, in the Marchmont district, the parts of the Algonquin become much differentiated, and it is no easy task to identify the main shore-line everywhere. The collateral shore-lines, both above and below it, introduce elements of confusion, but there are certain places where it is well defined, and by reference to these places it can be distinguished from all the others.

Archipelago in Orillia.

There was an archipelago of Algonquin islands, smaller than those we have been hitherto examining, in the townships of North and South Orillia. The outermost has a length of three miles, and has a very strong cutting around it, especially in concessions VI, VII and VIII, of North Orillia. The land on this island is very stony and much washed, both above and below the Algonquin; but the strong cutting

of the main Algonquin is unmistakable, and easily distinguished by its strength from the other shore-lines. It attains an altitude here of about 155 feet above Lake Couchiching, or about 875 feet above sea-level. The uppermost shore-line in the series below the Algonquin, sometimes known as the 'Great Nipissing Series,' becomes a strong shore-line in these outlying parts, at about 60 feet below the Algonquin.

Double shore-lines.

On the No. 9 crossroad, South Orillia, there is a strong Algonquin cutting a few rods west of the third line. The shore-line here is distinctly double on the same hillside, the upper showing out well at about 40 feet above the lower. It is also seen to be double south on the 2nd line in lot 11 ; and both strands are distinct in lot 10, looking south-east from the corner of the 2nd and 9th crossroads. On the west half of lot 21, con. XIV, Oro, the next lower shore-line is well cut at 60 feet below the main Algonquin. From near this place, the Grand Trunk Railway follows close to the Algonquin for nine miles, to the IVth concession of Oro.

GENERAL CONCLUSIONS.

General conclusions.

Upon the whole, I do not see much reason for calling the Algonquin, a glacial lake, as many writers do. Farther inland, i.e. westward, it might have been semi-glacial, but in this part of the country (Simcoe county) the evidence proves exactly the opposite, viz., that but little ice interfered with its intense activity, although there were tranquil periods before as well as after it, during which there was thick shore ice of a sub-arctic character.

Ice dams.

The ice dam theory of Prof. Newberry has been extensively employed to account for Algonquin phenomena. But along the north-eastern parts, where the glacier or ice dam is supposed to have rested, and where the shore-line might be expected to fail to give us evidence of its presence, the drift deposits being necessarily covered up with the hypothetical glacier, it is just where the shore-line has its most distinct development.

Oscillations of climate.

The cause of the great strength of the Algonquin beach is a proper subject of inquiry, on the basis of our observations along the shore-line. Its formation and subsequent preservation would seem to have been the result of an oscillation of climate. If it had not been preceded by an ice-covered calm sea, as well as followed by a similar one, the record it left on the ground might have been different. The eroding edge of the water body had a chance to mark a strong line, which it did with great energy.

Perfection of preservation.

What strikes one most forcibly everywhere, is the perfection with which the superficial formations just beneath the level of the Algonquin shore-line have been preserved. Had the activity of the shore-line period been maintained as the water surface subsided, greater changes would have been wrought in the lake deposits of an earlier date. But we find them almost intact, just as the Algonquin water left them. Unless the subsidence was instantaneous, which is not at all probable, we cannot escape from the conclusion that a tranquil ice-covered sea succeeded the Algonquin for a long period. There are evidences upon the ground of such a sub-arctic period.

Difficulties in correlating different shore-lines.

These observations furnish us still further with evidence that here, within the compass of a single county, the character of the shore-line varies from other causes than the configuration of the land it met with. Its great strength along its north-easterly exposure contrasts with its less intense, though still strongly marked, features along the base of the Blue Mountain escarpment. How futile then are the efforts of some geologists to identify shore-lines found at different places, widely separated, not merely by the width of a county but by hundreds of miles. Supposed absence of shore-lines is accounted for by the presence of glaciers. Oscillations of climate may ultimately be found to be the safest guide in attempts at identification of shore-lines or their equivalents in different localities. When the climatical characters and other phenomena connected with shore-lines shall have been properly investigated, the superabundance of theories, mostly conflicting with each other, may be expected to resolve themselves into distinct knowledge.

An Investigation of the Copper-bearing Rocks of the Eastern Townships, Province of Quebec.

Principal J. A. Dresser.

Copper-bearing rocks of Quebec.

The time from June 23 to August 30 was spent in an examination of part of the copper-bearing rocks of the eastern townships of the province of Quebec. These rocks have received more or less attention from the Geological Survey since 1847, specially important reports having been made upon them by Sir William Logan in 1863, by Jas. Richardson in 1866 and by Dr. R. W. Ells in 1888-9. In these reports the copper-bearing rocks were shown to form three principal belts, having a general north-easterly trend in agreement with the main axes of folding of the Appalachian mountain system, which is here represented by the Notre Dame mountains. Throughout a considerable part of their known length these belts are about 25 miles apart and are themselves generally from 2 to 10 miles in width. The

most westerly has been called the Acton belt, the second the Sutton and the third the Ascot, from townships in which they are largely developed.

Localities examined.

According to your instructions of May 27 last I was directed to examine a part of each belt with a view to eventually making a detailed study of the more important areas, and of determining their petrographical relations and extent as completely as possible. The Acton belt was first cursorily visited. Specimens of the country rock and of the intrusives which accompany the various deposits were taken at Wickham, Acton, Upton and Roxton. Three days were thus spent, in which I was much assisted by the Rev. L. C. Wurtele of Actonvale. The Sutton belt was next examined in a similar manner from Knowlton to the Vermont boundary line. The deposits at S. Sweet's, D. L. Smith's and the Sweet mine in Sutton, as well as the lesser mines on the south side of St. Armand Pinnacle were visited, and the main ridge of Sutton mountain, known locally as the 'Round Top,' was crossed in two directions. In this I was kindly aided by Mr. H. A. Honeyman, M.A., of Knowlton, whose familiarity with the geology of the locality was especially valuable. The eastern base of Sutton mountain between Glen Sutton and Mansonville was also examined in order to ascertain whether or not the copper-bearing rocks which form the western side, but do not extend to the more elevated parts of the mountain, re-appear here. It was found that they do not. Some extensive development work having recently been done at the mines in West Berkshire, Vermont, 4 miles south of St. Armand Pinnacle, a half day was spent in visiting them. These mines, which are the property of the Vermont and Boston Mining Company, repeat the conditions of the St. Armand and Sutton deposits and afford some of the best opportunities of noting the mode of occurrence of the copper observed in the study of the Sutton belt. I was courteously directed in visiting these mines by Mr. H. E. Rustet, Richford, Vt.

Camp outfit.

Other places visited.

The examination of the Ascot belt was begun at North Hatley, whence the Suffield, Eustis and Capelton mines were visited. Then after three days spent in the vicinity of Lake Megantic, to which reference will be made later, the Ascot and the Victoria mines near Capelton were visited, as well as some apparently smaller deposits on the east side of the St. Francis river. A camping outfit was then procured at Sherbrooke, and I was joined by Mr. A. P. Stevens, B. Sc., who had been assigned by you as my field assistant, and by Frank Graham, who was engaged as a general camp hand, and who also proved a most serviceable helper. Beginning in the fifth range of the township of Ascot Corner, the ridge of hills known as Stoke mountain

was examined in as much detail as the nature of the country permits, to its eastern extremity near Dudswell pond, in the township of that name. The ridge between the St. Camille and South Ham roads, which forms the topographical continuation of Stoke mountain, was followed as far as Silver lake, and was crossed at various places for a distance of eight miles. Some copper deposits recently opened in the vicinity of Lake Weedon, were also examined at this time.

Sutton belt.

The camp was broken up on August 17, and in the time remaining I proceeded alone to visit the more important of the known deposits of the Sutton belt in its northern extension in the townships of Leeds, Halifax and Chester. A reputed occurrence of copper at St. Nicholas, was also visited, and a few days were spent in the examination of some important deposits of copper-bearing pyrrhotite on the west side of Lake Memphremagog. This, with a few separate days spent at Melbourne, Upton and Ascot, completed the field work of the season.

The Acton belt.

The Acton Belt.—The principal occurrences of copper that were observed in this belt were those long known at Wickham, Acton, Upton, Roxton and St. Pierre de Durham. The country-rock in all cases is limestone, generally in association with black shales or slates of sedimentary origin. Igneous rocks in the form of small dykes or irregular masses occur at all these places. They are intrusive in every instance as far as known, and sometimes themselves carry copper. The greater part of the copper, however, occurs in the limestone, or occasionally in the black slates, near the intrusives. The ores vary with the different localities. At Acton, bornite and chalcocite predominate, while at Upton, chalcopyrite and chalcocite are the chief ores, bornite being rare. Native copper is said to occur at the latter point, but I was not able to find any.

Similarity of intrusive.

A feature of interest, as well as of possible importance, is the apparent close similarity between some of the intrusive rocks in the Acton belt, and the latest dykes which are found at the Eustis mine in the Ascot belt. In the latter case, however, the country-rock is a very old eruptive, and is itself the copper-bearer. The Acton belt, so called, is a rather ill-defined area in the Upper Cambrian and Lower Silurian systems. The distance from Durham to Upton, which are extreme points in the width of the belt, is about sixteen miles. From Roxton to Wickham, along its length, it is only twenty miles, but copper is known to occur further north-eastward at Drummondville, Wendover, Somerset, Nelson, St. Flavien, and, it is said, even at St Nicholas on the St. Lawrence river, over a distance in all of more than one hundred

miles. In the course of a brief examination of the St. Nicholas locality, I found no copper at all. An igneous rock similar in appearance to that which carries copper in the vicinity of Lake Weedon, in the eastern part of the Ascot belt was found, however, in considerable quantity. In the Acton belt on the west side of the St. Francis river there are also reported to be several smaller deposits of copper, as at St. Theodor d'Acton, St. Valerien, and in Danby, some of which are now receiving attention and are said to give considerable promise.

Geological positions of copper occurrences.

Although many of these copper localities are near the contact of the Cambrian rocks with those of Cambro-Silurian age, others, including some of the most important, occur within either formation. Hence they may be looked for anywhere over this long irregular area wherever intrusive rocks are to be found. The geological structure apparently gives no clue to the occurrence of the intrusives. The eastern part of this belt, between the St. Francis and the St. Lawrence rivers was, as has been said, not examined, except very briefly at the single locality of St. Nicholas. While it is not a region in which rock exposures are numerous, yet the rapid deforesting of the country in recent years and also the extension of the Intercolonial and the construction of the Megantic and Lotbinière railways should open some new parts of this region that may be worthy of examination. The high quality of the ores in this belt gives an especial incentive to the search for them.

Rocks of Sutton and Ascot mountains.

The other copper-bearing districts of the eastern townships are more closely connected with the geological structure of the region. In the reports of the Geological Survey for 1886 and 1894 three areas of Pre-Cambrian rocks, which in previous reports had not been distinguished from the intervening Palæozoic strata, were recognized, and their extent mapped. Two of these, the Sutton Mountain series and the Ascot or Stoke Mountain rocks, respectively include amongst their measures the middle and eastern copper-bearing belts of the earlier surveys. It is therefore a fundamental part of the present investigation to separate the copper-bearing from the other parts of these ancient rocks.

Copper ores associated with igneous rocks.

To this end two facts of prime importance have been thus far ascertained: that the greater part of these Pre-Cambrian areas are of igneous, not sedimentary, origin; and that copper occurs only in, or in close association with, the igneous rocks. The latter range from volcanic to plutonic in texture, and chemically they present both acid and basic types. All are highly metamorphosed and their original characters are often much disguised, if not altogether obliterated. Their intense foliation and shearing have commonly given the rocks which

are largely fine-grained 'traps,' the aspect of much altered sediments, which they have hitherto been thought to be. On this assumption the ore bodies have been long regarded as bedded veins and so have been correlated on supposed stratigraphic grounds. In consequence of this change of view as to the character of the country rock, which a preliminary microscopic examination has established, such correlation becomes useless, and also any determination of the values of deposits based upon it. A brief notice of characters of some of these rocks was presented to the Canadian Mining Institute in March last (Journal Can. Min. Inst., vol. V, 1902) and to the American Journal of Science in July.

Pre-Cambrian of Sutton mountain belt.

The Sutton Mountain Belt.—The width of the Pre-Cambrian of this belt at the Vermont boundary line is about twenty miles, some sixteen of which are of volcanic origin. Copper occurs at many places in the volcanic portion, but is nowhere found, as far as could be ascertained, in the sedimentary strata. The latter include all the ridge of Sutton mountain, which consists largely of a gneissose sandstone, and so is entirely different in origin and lithological character from the main part of the large area to which it gives its name. The volcanic area consists chiefly of a dull green 'trap' rock, of fine grained and of rather uniform character. It is often amygdaloidal and is so far altered that chlorite, quartz and epidote are the principal minerals distinguishable by the naked eye. Its precise original character has not yet been determined. It has generally been described as chloritic slate. Quartz in veins and other forms is abundant in many places and sometimes occurs in close association with epidote. The latter forms nodules, which from their greater resistance to erosive forces stand out in prominent relief on weathered, or more especially on water-worn surfaces. These nodules are often found on closer examination to consist of alternate concentric layers of epidote and quartz. They are usually from one to three inches in diameter and sometimes make up as much as one-fourth of the entire rock.

Evidence of intense metamorphism.

In its unaltered state this rock was probably a rather basic one of the porphyrite or possibly of the diabase class. As the above description indicates, however, its metamorphism has been intense, and a detailed examination of the thin sections now being prepared will be necessary to determine its primary character as well as other important matters concerning it.

Certain smaller portions of the volcanic mass, however, are very different in aspect and also in mineralogical and apparently in chemical composition. They are light coloured, gray or fawn, and have a talcose feel

which is, however, probably due to the shreds of colourless mica (sericite) developed along the shearing planes of the rock. These are the micaceous and nacreous slates of the earlier surveys. Similar appearing rocks in the Ascot belt have been found by the aid of the microscope to be crushed and sheared volcanics which would have had about the character of quartz-porphyry when in an unaltered state. Copper seems to occur more frequently in these than in the chloritic rocks, although it is found in both. In the county of Megantic they frequently carry the rare mineral ottrelite, or chloritoid, which has given them a peculiar interest to mineral collectors. Several occurrences of the corresponding facies of this rock were observed in the Ascot belt where it passes by sharp transition into the basic volcanic already described. No field evidence to the contrary has yet been found in this area, so, pending a more complete investigation, the same relation is assumed.

Nature of ores.

The ores are chalcopyrite, bornite and chalcocite, with smaller proportions of blue and green carbonates, and they occur in a gangue consisting chiefly of quartz and calcite. They do not occur in true veins in any instance I have yet observed. Rudely lenticular masses seem common and frequently, either from the nature of the exposure or of the deposit, no definite form is discernible.

The volcanic portion of the Pre-Cambrian was found in the townships of St. Armand, Sutton, Brome, Bolton, Stukely, Ely and Melbourne, on the west side of the St. Francis river, and in Cleveland on the east side. In Chester, Halifax and Leeds, between 40 and 50 miles farther to the north-east, where the belt was next crossed, the rocks appear with the same characters as before. The reported occurrence of copper at many intervening points indicate that the traps are continuous in the interval. They have a width of about two miles on the St. Francis river, but, in Leeds, become as wide again as they are in St. Armand. The distance between these points is rather more than 100 miles. Within that area over 300 localities were reported, in 1866, as copper-bearing, and some 23 as actually producing more or less ore. To this number a few more important occurrences have been since added. Some of these deposits have doubtless been worked out, or have proven unprofitable under the conditions in which they were worked, while others have been discarded on very superficial examination or inconclusive tests. For two seasons Mr. W. F. E. Bowers, of Chicago, has worked a new property on lot seven of the first range of Melbourne. At my visit in June last, a shaft seven and a-half feet square was sunk vertically to a depth of 50 feet in a quartz mass, which carried copper pyrites and bornite in stringers in the quartz through about one-quarter

Copper bearing localities.

of its width. Assays of the chalcopyrite were said to give 24 per cent copper, 32 per cent sulphur; of the bornite 19 per cent each of copper and sulphur. There was also $9 worth of gold to the ton.

Mines reopened.

Several of the previously worked mines in this belt have been recently reopened to some extent. Amongst them are the Ely mine in Ely, the Balrath in Melbourne, and some smaller properties in Shipton, Brome, Leeds and Chester. The Pre-Cambrian belt extends some forty miles to the north-eastward of the township of Leeds, but there was not time to make any examination of it. A few reported occurrences of copper in it would, however, indicate the continuance of the volcanic rocks, and the consequent promise of the area to the prospector. This is emphasized by the fact that the most important deposit yet worked in this belt, the celebrated Harvey Hill mine, now the property of Dr. Jas. Reed, occurs near the north-eastern limit of the township of Leeds.

Igneous rocks constitute Pre-Cambrian of Ascot belt.

The Ascot Belt.—The Pre-Cambrian of this area consists, in so far as it has been studied in detail, almost entirely of igneous rocks. Upon these there are occasionally found overlying remnants apparently of Palæozoic strata which once covered the entire area. They are chiefly ferruginous black slates common to the Lower Trenton formation and are found in places better protected from denudation.

The igneous rocks are essentially of the same types as those described in the Sutton belt, but their proportions are approximately reversed. In this Ascot belt the acid class—the micaceous and nacreous slates—greatly predominates over the basic type of chloritic and epidotic rocks. The latter present no features of difference from those already described that are worthy of note. In the acid class, however, there is a greater variation corresponding in some measure to its greater extent. This is chiefly in the degree of crystallization. While the main parts of these rocks are porphyritic in structure, there are both finer grained rocks and those of coarser texture. The former are unimportant in extent, as far as yet studied, but rocks of a more advanced stage of crystallization form large areas in Stoke mountain and also appear in various other places. These granite porphyries and porphyritic granites comprise a great part of the barren, or non-cupriferous areas, though in a few instances they carry important quantities of copper.

On the west side of the St. Francis river later dykes cut the other igneous rocks; and while the latter are extremely metamorphosed, the former are but little, if any, changed in position or chemical character,

Olivine diabase and comptonite have been found in an exceedingly fresh state, the latter cutting Lower Trenton sediments, as well as Pre-Cambrian eruptives. It is thus evident that this part of the Ascot belt at least has been the scene of volcanic activity at intervals through a long period of time, from Pre-Cambrian to Post-Trenton. Dykes were not observed in any other part of any of the igneous rocks thus far studied, nor has any other area of equal size produced as much copper as this part of the township of Ascot. While there is little but presumptive evidence that the greater metallic content of these rocks is due to successive and more varied volcanic action amongst them, yet the coincidence seems worthy of note. Evidence of volcanic activity.

The Pre-Cambrian, as defined by the survey of 1886, extends from the east side of Lake Memphremagog, in the township of Stanstead, through Hatley, Ascot and Stoke townships and reappears after an interval of some 8 miles further to the north-east in the townships of Weedon and Stratford, and after a further interval again in Garthby. The position of the Garthby area, however, leaves it a matter of doubt whether it should be included in the Ascot or the Sutton belt, or whether, as is more probable, it forms a connecting link between them.

My examination between St. Francis river and Lake Memphremagog was made chiefly to ascertain as far as possible in the working mines the petrographical relations of the ore-bodies, and hence it did not extend into the township of Stanstead and only included the northern part of Hatley. Here the Pre-Cambrian was found to be largely, if not wholly igneous. Also on the west shore of Lake Memphremagog the basic volcanics again occur, having a width of nearly a mile and a half south of the Mountain House landing. They form the base of Owl's Head mountain. Four specimens described by Dr. F. D. Adams in the report of the Geological Survey for 1880–1–2, (pp. 11, 12 and 13A), appeared to be from this locality. They were altered diabase. The area is densely wooded along the lake shore and time did not permit of an examination further to the westward. The extension of the Ascot traps across Lake Memphremagog, thus brings the rocks of that belt within eight miles of the Sutton belt; whence it is not improbable that these belts may yet be found united at either end, the Ascot belt forming a chord seventy miles in length, which reaches the Sutton belt at two points about one hundred miles distant when measured on the arc it describes. The occurrence of these rocks on the west side of the lake, also adds to the otherwise promising prospects of this as an important copper-bearing district. Petrographical relations of ore-bodies studied.

Of the importance of the area between Lake Memphremagog and the St. Francis river, I may quote from the Report of the Geological

Survey for the years 1888–9 in which this belt from Hatley to Stoke is described in detail by Dr. R. W. Ells, who mentions that of fifty-five copper localities, thirteen were actually working in the year 1865.

Report of Dr. Ells quoted.

Concerning these deposits, Dr. Ells said: 'It may be very safely predicted that the real value of many of the mines which were opened twenty-five years ago and speedily closed has never been ascertained, and that masses of ore of equal importance to those so long worked will at some not distant date, by careful prospecting be found. Much of the failure of twenty-five years ago was doubtless due to the speculative character of the work done. Mines were bought and sold on the flimsiest sort of evidence as to their value or worthlessness, often on samples which were obtained from an entirely different location from that represented. The growing importance of these ores as a source of supply for sulphuric acid is being very fully realized by the men interested in this industry in the United States, their superiority over most of the ores there found, for this purpose, being acknowledged.'

Besides the well-known and extensive works of the Eustis Mining Company at Eustis, and of the G. H. Nichols Chemical Company at Capelton, the principal work more recently done has been at the group of mines at Suffield, the Ascot and the Sherbrooke mines.

Acknowledgement.

I am specially indebted to Mr. John Blue, manager of the Eustis mine, who most courteously extended every facility for a complete examination of that extensive mine.

Stoke mountain range.

Stoke Mountain is a series of hills some three to five miles in width which rise gradually from the St. Francis river opposite the city of Sherbrooke to a maximum height of fifteen hundred feet above Dudswell pond at Bald Peak, twenty-four miles east of Sherbrooke. It is a continuation of the Capelton hills and has a like origin and a similar geologic structure. The northern side presents a serrated ridge as seen from the vicinity of Stoke Centre and is, throughout, the highest part of the entire elevation. The southern face is less elevated, but yet it is generally a quite abrupt feature of the landscape. The intervening part of the mountain, while having a general southward slope, is yet very poorly drained, and in this wet season much of it was an impassible swamp. The rock exposures in it are very few.

Iron pyrites.

The northern ridge of the mountain shows little evidence of the presence of copper. In the sixteenth lot of the eighth range of Stoke, on the farm of Joseph Tremblay, iron pyrites occurs in considerable amount in an elliptical mass some two feet thick of quartz and calcite and also in the slaty country rock.

This locality and a somewhat similar one on lot 15, range X, of Stoke are in the Cambrian measures a quarter of a mile north of the Pre-Cambrian. They are the only occurrences of metallic constituents in notable amount that I saw on the north side of the mountain, with the exception of a small occurrence on lot 21, range V. of Ascot Corner. Mr. C. W. Maynard informs me, however, that some occurrences of pyrites are to be seen on the neighbouring hills north-west of the Wattopekah river.

The central portion of the Stoke mountain is so far drift-covered and so heavily forested that little information can be obtained regarding the nature of the underlying rocks. A few specimens were taken and will be studied in detail. But several large brooks which rise in this depression have cut deep gorge-like channels through the southern edge of the mountain and so afford excellent rock exposures there. That part of the mountain is thus shown to be a continuous mass of sheared volcanics identical in character with those of the Capelton hills. Like them also these rocks contain rusty zones running parallel to the lamination of the rock, which are due to the oxidation of pyrites which the rock contained when fresh. These rusty zones, which are important surface indications of ore deposits, are especially frequent on the Mills, Big Hollow, Harrison, Kingsley, Jenkerson, Rowe and Willard or Hall's brooks. They were also observed in several places on lot 27, of the VIIIth range, of Ascot Corner.

Occurrence of gold.

The occurrence of gold too seems to indicate the presence of copper throughout this locality, as in other parts of the belt. The relation of these minerals in the Capelton hills points clearly to their genetic connection. This is well shown at the Eustis mine. There the volcanic rocks of the copper-bearing belt rise with a steep slope on the southern side and are overlain near the crest by sedimentary slates. In a small brook which runs near the mine, I am told by Mr. Blue, the manager, alluvial gold occurs in small quantities and assays of the quartz veins which cross the brook also yield gold as far up the brook as the volcanic rock is exposed. Beyond this no gold has been found either in the gravels or in the bed rock.

Alluvial gold has been found probably in all the brooks on the south side of Stoke mountain and especially in Westbury and Dudswell, and its source has been shown by Dr. Chalmers to be undoubtedly in the Pre-Cambrian rocks. In fact visible gold occurs in the rock in a few places. These facts have generally diverted the prospectors' attention from the search for copper which the geological conditions indicate may yet be found to be the more important mineral resource of this district.

Lake Weedon to Lake Aylmer.

From the vicinity of Lake Weedon to Lake Aylmer the Pre-Cambrian, which is covered by Cambro-silurian and Silurian sediments from Dudswell pond eastward, again appears. Time did not permit of a detailed examination of this area which its importance seems to warrant, but a brief visit to some points west of Lake Weedon show the area to be a promising one. As far as seen it consists of an igneous rock of rather plutonic character of crystallization and somewhat resembles part of the northern ridge of Stoke mountain. It differs from that, however, in containing copper apparently in important quantities. On lots seventeen and eighteen of the third range of Weedon, iron and copper pyrites occur in veins, masses and small grains in the country rock. Outcrops of this character have been found at various places on these two lots. Other occurrences of copper are reported from different parts of this district, so that it seems worthy of detailed examination.

On the South Ham road, four miles east of Marbleton, Mr. William Mackie showed me a block of pyrites, said to have been found near a ridge which forms a connecting link topographically between Stoke mountain and the Weedon hills. This ridge was crossed in several places farther westward but was there found to be composed wholly of later sedimentary rocks. Yet, being wooded in the part of the ridge mentioned, and hence not satisfactorily examined, an outcrop of the copper-bearing rocks may yet be found in this vicinity.

Rocks of Lake Megantic area.

The third area of rocks of Pre-Cambrian age, which has been mentioned, occurs along the boundary line between the province of Quebec and the states of New Hampshire and Maine. It lies chiefly in the townships of Emberton, Chesham, Woburn, Clinton, Louise and Ditchfield. Its similarity in age to the Sutton and Ascot copper-bearing areas, together with the reported occurrence of cupriferous blocks in the vicinity, made it desirable to visit the locality. Accordingly the exposures along the Canadian Pacific Railway were carefully examined in Ditchfield township between Boundary and Trudel sidings; then the road from Woburn landing at the head of Lake Megantic to Channay and thence to the Arnold river; after which the road from Channay to Chesham or Notre Dame des Bois was examined. The rocks seen in Ditchfield were found to be gray volcanics essentially similar in character to those already described from Sutton and Ascot. In a cutting of twenty rods in length near the 189th mile post from Montreal the rock is everywhere rusted from the oxidation of pyrites. In the central part copper and iron pyrites comprise probably ten to twenty per cent of the rock through a belt of

Copper.

ten yards in width. As it crosses the line of the railway at an oblique angle the width of the belt is, however, somewhat less than thus appears.

Between Woburn landing at the south-west extremity of Lake Megantic and the village of Channay, the principal rock exposure is an abrupt hill some five hundred feet high in lots 10, 11, 12 and 13 in ranges I and II of Clinton. This is locally known from its peculiar profile as the 'Scotch Cap.' Its igneous origin is denoted by the colouring on the Geological Survey map of 1886. Lithologically it is found to be identical with the basic volcanics of Sutton and Ascot. Chlorite and epidote are prominent constituents of the rock. No copper was seen in it.

I was informed by the Rev. Père Huard, curé of Channay, that bornite had been found on the bank of the Arnold river two and a half miles from Channay, and that preparations were being made to develop the property. As it was said that the exposure could only be seen at low water, and the water in the river being very high at the time of my visit, I did not go to the locality.

Along the road between Channay and Chesham, or Notre Dame de Bois, rock exposures are numerous and are wholly of the basic volcanic class. Rusty patches similar to those already mentioned were observed in a few places.

Extent of copper-bearing belt.

The similarity of these rocks to those of the known copper-bearing belts, the known occurrence of copper in Ditchfield, and the fact that chloritic and epidotic rocks have been reported by many observers in the highlands of Gaspé, point strongly to the possible great extent of this volcanic belt. It seems possible that the watershed which determines the Maine boundary line may, when the country becomes accessible for detailed examination, yet be found to form a more or less continuous ridge of copper-bearing volcanics, perhaps to be ultimately connected with the cupriferous Pre-Cambrian of New Brunswick.

The Smith mine, Knowlton Landing.

Other areas.—Another occurrence of copper, which is not related in position or geologic relation to those already described, is found on the west side of Lake Memphremagog, principally in the townships of Potton and Bolton. The largest of these, the property of Mr. G. E. Smith, is about two miles from Knowlton Landing but I was not able in the time available to ascertain the full extent of this occurrence. It has been developed by sinking a shaft some eighty feet in depth while a horizontal tunnel, one hundred feet in length, cross-cutting the ore body reaches the shaft fifty feet from the surface. The course of the

cross-cut is towards Sugarloaf mountain on the west side of which the mine is situated, and the ore body seems to be a phase of the zone of contact of an intrusive mass of the mountain with the surrounding sedimentary rocks. A curious repetition of these conditions in miniature is found three-quarters of a mile north of G. E. Smith's mine on the farm of John Burbank. Here a small intrusion of plutonic rock (granite or diorite) cuts the same sediments which border on the west of Sugarloaf and produce in a contact zone two feet in width a few inches of similar ore.

Character of ore.

The ore is a pyrrhotite said to carry a small percentage of copper. It oxidizes very readily giving a strong odor of sulphur in the shaft. The amount of sulphur, of which it is reported to carry 35 per cent, which is carried out in solution by water is surprisingly large. Drift material, fallen branches and leaves of trees are cemented together by the iron thus leached out. Several inches of this recent conglomerate are said to have been deposited since the uncovering of the ore body ten or twelve years ago. I was much assisted in the brief examination made of this locality by Mr. O. Rexford, B.Sc., of Knowlton Landing.

Similar ores occur at several places in Potton and Bolton, but no others have yet been found to be of so great extent. The occurrence of intrusive rocks is so frequent in this district, however, that a repetition of the conditions of the Smith mine might be looked for with every prospect of success amongst them. This is in fact one of the most important localities for detailed prospecting in the eastern townships.

General conditions of mining.

General conditions.—The conditions of transportation, mining and treatment of ores have greatly changed since the early 'sixties,' when active work was general in the mineral-bearing districts of the eastern townships. The decline in the price of copper has been followed, though at some distance of time, by changes of an opposite tendency. The clearing and general opening up of the country has been accompanied by the establishment of abundant railway facilities, which with the exception of the Grand Trunk Railway date subsequently to the closing of most of the mines. The Intercolonial and the Drummondville branch of the Canadian Pacific Railway run longitudinally throughout the length of the Acton belt. The latter line also runs within the Sutton belt from Foster to the Vermont boundary, passing in the immediate vicinity of the principal mines of that area, which were formerly from thirty to fifty miles from a railway. The Canadian Pacific Railway towards Sherbrooke now passes through the township

Railway facilities.

of Bolton and further eastward crosses the boundary line in the volcanic area of Ditchfield. The Boston and Maine Railway runs parallel to the Capelton hills at their foot, while the Quebec Central skirts the Stoke mountain on its southern side throughout its length, crosses the Weedon and Lake Aylmer district, and follows the south-eastern side of the Sutton belt from the vicinity of the Harvey Hill mines to the Chaudiere river. Thus these mines, for instance, which were formerly twenty-five miles from a railway are now brought within seven.

The Orford Mountain Railway also opens an important part of the townships of Stukely and Ely in the same belt.

To these, advantages and advancement in means and methods of mining and smelting must be added. At present the only smelting works in the district are those of the G. H. Nicholls Chemical Co. at Capelton. Here custom work is occasionally done, but mill tests seem to be too rarely made in the development of smaller properties, the tendency being to rely too much upon assays of hand specimens, the method of selection of which it is always difficult to determine. A movement is also on foot to establish a custom smelter at Sherbrooke. Under all these changed conditions, therefore, the production of copper in the eastern townships becomes a new economic question, and one very different from that of thirty-five years ago when most of these mines were closed.

APPENDIX.

ANALYSES OF ROCKS FROM BROME MOUNTAIN.

(By Mr. M. F. Connor.)

Rock analyses.

	No. 4561	No. 4575	No. 4582
SiO_2	44·00	55·68	61·77
Al_2O_3	27·73	20·39	18·05
Fe_2O_3	2·36	2·10	1·79
FeO	3·90	1·95	1·75
MgO	2·30	0·80	0·89
CaO	13·94	1·92	1·54
Na_2O	2·35	9·18	6·83
K_2O	0·45	5·34	5·21
H_2O	0·80	1·50	1·10
TiO_2	1·90	0·60	0·74
P_2O_5	0·20	0·06	0·15
MnO	0·08	0·31	0·15
	100·41	99·83	99·97

No. 4582 is a light gray or fawn coloured rock with a generally granitic structure and coarse texture. Feldspar and specks of dark mica and hornblende can be discerned in the hand specimen.

By the aid of the microscope microperthite is seen to be the greatly predominating constituent of the rock. In addition to biotite and a green hornblende, which are present in very subordinate amounts, sphene is also present with needles of apatite and an occasional grain of iron ore.

The rock belongs to about the laurokite class described by Brögger in Southern Norway.

It was formed by the second great intrusion of Brome Mountain laccolite.

No. 4575. This is a greenish-gray ingrained rock containing well marked phenocrysts of orthoclase feldspar.

The groundmass of this rock consists either of an unindividualized base or of patches of granular feldspar and ferro-magnesian material. It has yet to be studied in detail.

It forms the third intrusion of Brome mountain.

No. 4561. This is a massive rock, gray in colour, and weathering to a dull brown. The structure is granitoid and the texture medium.

Feldspar and small amounts of dark minerals, chiefly hornblende, mica and iron, can be distinguished in it by the unaided eye.

In the thin section basic plagioclase is found to make up as much as 90 % of the rock. The remaining constituents are pyroxene, olivine and biotite, with accessory magnetite and apatite.

Hornblende enters into the composition of many parts of the rock in amounts quite equal to pyroxene, but in others seems to be entirely absent.

The rock passes in places into essexite and theralite, to which rocks it is somewhat closely allied. Its varietal classification will be determined when the mineral constituents have received a little more detailed study in connection with the calculation of its chemical composition.

It is the earliest of the three intrusive masses which form the igneous part of Brome mountain.

Palæontology and Chronological Geology.

H. M. Ami.

(A.) Manitoulin Island District.

During the past year much time has been spent in determining the collections of organic remains from various localities in the Manitoulin Island region of Lake Huron, in the province of Ontario. Faunal lists were prepared and the geological horizon which these predicated were given.'

The principal localities from which these collections were obtained by the various officers of the Geological Survey, from 1847-1898, and the geological horizons they indicate, so far as the collections and mode of preservation of the specimens permitted, are here given. The collections count no less than 184, but only the more important ones are now recorded for the sake of reference :—

THE CHAZY FORMATION.

1. In his list of the fossils from the island furthest south of the group off Point Pallideau, Lake Huron, E. Billings notes that the occurrence of *Modiolopsis parvuscula*, *Vanuxemia inconstans*, *Pleurotomaria stamineu* and *Lingula Huronensis*, species known to occur in the Chazy of different portions of Ontario, notably in the Montreal-Ottawa-Champlain Basin. No evidence of the presence of the Chazy was obtained by me from the numerous collections examined, but the foregoing determinations made by Billings are undoubtedly accurate and the presence of the Chazy formation in the region in question must accordingly be recorded from the 'island furthest south of the group off Point Pallideau.'

BLACK RIVER AND TRENTON FORMATIONS.

2. Saint Joseph Island, Gravel Point, Lake Huron, T. C. Weston, 1882.

3. Goat Island, south of Lacloche Island, Lake Huron, Robert Bell, 1892.

4. Great Cloche Island, near Little Current, Lake Huron, Robert Bell, 1892.

5. Island opposite camp near junction, west side Lacloche Island, Murray, 1847.

6. West side of Lacloche Island, Lake Huron, Alex. Murray, 1847.

7. Islands between Lacloche Island and Manitoulin Island, R. Bell, 1859.

8. Fossils from the lower bed of the escarpment west of the lime-kiln near Hilton Village, St. Joseph Island, Lake Huron, Alex. Murray, August 15, 1860.

9. Fossils from the south-western Pallideau Island, opposite the Bruce Mines location, A. Murray, 14th September, 1867.

10. Island west of Grant Island.

UTICA FORMATION.

11. Along the shores of Shequenandod Bay and Islands, A. Murray, 1847.

12. Islands north of Maple Cape, Manitoulin Island, Lake Huron (collector and date not given on the specimens, but probably A. Murray, 1847). Zone of *Triarthrus Canadensis*, Smith.

13. Little Current, Manitoulin Island, Robert Bell, 1892.

LORRAINE OR RICHMOND FORMATIONS.

14. *Summit of the Ordovician System—precise formation not ascertained.* Manitoulin Gulf, Head transition beds.

15. Between Cape Crocker and Montrésor (collector and date not given.)

16. Manitouwaning Bay, Lake Huron, in the upper part of the "Hudson River Group," R. Bell.

17. Ledge, top of shale, East Gore Bay, R. Bell, 1866.

18. Wekwemikoug shore, Manitoulin Island, Lake Huron, R. Bell, 1892.

19. East side of Gore Bay, top of cliff, R. Bell, 1867. A commingling of Richmond and Lorraine formation species occurs in the collection. Both formations probably occur in the escarpment.

20. East side of Gore Bay, ledge of top shale, Manitoulin Island, Lake Huron, R. Bell, 1867.

LORRAINE FORMATION.

31. Griffiths Island, near light house, Alex. Murray, 1861.

22. Wekwemikong, Manitoulin Island, Lake Huron (collector and date not given but probably Alex. Murray).

RICHMOND FORMATION.

23. Establishment at Manitouwaning, Manitoulin Island, (collector and date not given).

24. Fossils from a point about 20 ft. high at N. E. point of Drummond Island, Lake Huron. Alex. Murray, Aug. 14, 1861.

25. Cape Smyth, Lake Huron, Robert Bell, 1859.

26. Cape Rich, Lake Huron, Robert Bell, 1859.

27. East side Manitouwaning Bay, near head, Robert Bell, 1865.

28. West side, Cape Robert, Manitoulin Island, Robert Bell, 1865.

28. Ka-ga-wong clearing, Manitoulin Island, Robert Bell, 1865. East side of West Bay, one mile from village, Manitoulin Island, Robert Bell.

29. East side of Gore Bay, Manitoulin Island, Robert Bell, 1867.

30. East side of Gore Bay, R. Bell, 1867, (Middle Terrace).

31. South side of Lacloche Island (collector and date not given).

32. Drummond Island, North Point.

CLINTON AND NIAGARA FORMATIONS.

33. Cliff over Cape Wingfield, about 138 feet over the lake, Manitoulin Island region, Lake Huron, A. Murray, July 18, 1861.

34. McLeod Harbour, two miles north of harbour, R. Bell, 1859.

35. Providence Bay, Manitoulin Island, Lake Huron, R. Bell, 1865. North-west corner of Ka-zoo-wong Lake, R. Bell, 1868.

36. South-east extremity, Elizabeth Bay, Robert Bell, 1865.

37. North-east extremity of South Bay, Manitoulin Island, Robert Bell, 1865.

38. North-west extremity, Manitoulin Island, R. Bell, 1865.

39. Ninety fossils from one mile S. S. East Head Gore Bay, Manitoulin Island, Robert Bell, 1866.

40. Top of cliff, East Gore Bay, R. Bell, 1866.

41. Wekwemikong Hill, Manitoulin Island, Robert Bell, Sept., 1892.

42. Lot 28, Concession VI, Township of Allan, Manitoulin Island, Lake Huron, Robert Bell, 1892.

43. South side of Manitoulin Island opposite the middle of Stone Lake, same as Lot 28, Con. VI., Township of Allan, Robert Bell, 1892.

44. Between South Baymouth and Blue Jay Creek, half way in the central portion of the area supposed to be Guelph in age, Grand Manitoulin Island, Ami, 1898.

45. Michael's Bay, west side, Manitoulin Island, south shore, Ami, 1898.

46. One and a quarter mile from where the post road crosses Blue Jay Creek, between Michael Bay and South Baymouth, Township of Tehkummah, Grand Manitoulin Island, Ami, 1898.

47. Between Manitou and Blue Jay Creek, Township of Tehkummah, Grand Manitoulin Island, Ami, 1898.

48. Ledges about two miles north of South Baymouth on the road to Michael Bay, Grand Manitoulin Island, Ami, 1898.

49. Old coral reef, six miles north of South Baymouth, west side of bay, Township of Tehkummah, Grand Manitoulin Island, Ami, 1898.

50. Fossils from Cape Chin, Lake Huron, Alex. Murray, 1848.

51. Entrance to South Bay, Manitoulin Island, Robert Bell, 1865.

52. Barrier Island, Lake Huron, fossils from loose slabs of limestone. Pentamerus beds, (collector and date not given).

53. Cockburn Island, Lake Huron region.

54. Drummond Island, south-west end, A. Murray, 47, 1826.

55. Fairview Cove, Drummond Island, Lake Huron, Robert Bell, 1866. South side and west end of Drummond Lake, Lake Huron, Geol. Survey collection, determined by the late Mr. E. Billings.

56. East side of the village in the bight of West Bay, Manitoulin Island, R. Bell and H. G. Vennor.

To this horizon are assigned the gray shales, coral-bearing rocks, of the southern portion of the Island, and cream-coloured and gray fossiliferous limestones of the south shore of the Grand Manitoulin Island, near South Bay Mouth, Lake Huron, besides the gray limestones of Flower pots, Perseverance and Cove Islands.

57. West side of Thomas Bay, south shore of Manitoulin Island, Lake Huron, H. M. Ami and W. J. Stewart. July 29, 1898. (Zone of *Astrocerium venustum*, Hall.)

58. Irving Point, east side of South Bay Mouth, Grand Manitoulin Island, Lake Huron, H. M. Ami and W. J. Stewart, July 29, 1898.

59. Flowerpots Island, near the lighthouse, Lake Huron. H. M. Ami, 1898.

60. Perseverance Island, Lake Huron, H. M. Ami, 1898.

61. Cove Island, near lighthouse, H. M. Ami, 1889.

Besides the above there are a large number of geological collections to which a precise geological horizon cannot be assigned without doubt, inasmuch as the evidence afforded by the materials examined was insufficient. Of these collections there are those which indicate the presence of summit beds of the Ordovician system, but which on account of the character of the material, cannot serve to determine whether the Lorraine or Richmond or both occurs. It is greatly to be desired that further material be obtained so as to complete the work.

Fossils from the island furthest south of the group off Point Pallideau, Lake Huron, as determined by the late Mr. Billings, indicate a horizon which is decidedly older than the Birdseye and Black-river formation and point to the existence at this locality of the Chazy fauna and formation. Additional material from the locality is much desired.

As regards the presence of the Guelph formation, the writer has not as yet recorded any occurrences of typical species of fossils of this formation in the collections examined from the Grand Manitoulin region.

Accompanying my report now in the hands of Dr. R. Bell on the determinations of the organic remains from various localities, in the Geological Survey Museum will be found a general review of the palæontological evidence at hand in the writings of the following geologists and palæontologists: J. J. Bigsby and Charles Stokes in 1824; of Charles Stokes again in 1849; Elkanah Billings in 1862, 1863 and 1866; H. Alleyne Nicholson in 1875; George Jennings Hinde in 1879; Arthur H. Foord in 1889; H. M. Ami in 1892; J. F. Whiteaves in 1896; H. M. Ami in 1899; and L. M. Lambe in 1900 and 1901.

It is extremely desirable that further collections be obtained from the Ordovician and Silurian succession of the Manitoulin Island district of Lake Huron, inasmuch as the sedimentation of that area is not only quite distinct from that of the Niagara and Toronto districts of the Ontario basin, but bears strong resemblance to the succession known and recorded in Indiana, Ohio and Kentucky to the south, as well as to that of the Island of Anticosti, in the valley of the St. Lawrence east.

Especially is this resemblance a striking one as regards the calcareous sediments of the Richmond formation, whose presence in the Grand Manitoulin island had not been hitherto detected.

B. Ontario and Quebec.

Faunal lists, together with the horizon they indicate, were prepared by me during the year 1902, from various localities in Central and Eastern Ontario and in a portion of the Province of Quebec along the Ottawa Valley.

From Belleville, Havelock, Douro, Dummer, Vensikle and Oak Lake settlements and other localities in Central Ontario, as well as from twenty-five localities in the Kingston district, such lists were prepared for Dr. A. E. Barlow's and Dr. R. W. Ells's reports respectively.

Work on Pembroke sheet.

Faunal lists were also prepared by me during the year from numerous collections and localities in connection with the Pembroke sheet or geological map of the Ottawa Valley about Pembroke in charge of Dr. R. W. Ells. The geological horizon indicated by the fossil remains entombed in the strata from which they were derived has also been added. The separation of the limestones of the Chazy, Birdseye and Black River, and of the Trenton formations, which occupy distinct positions in the succession of Ordovician strata of the Ottawa Valley was carefully effected and the value of the palæontological determinations and evidence thus obtained materially assisted in the mapping out of the various strata and formations in the district. To these were added lists previously determined by J. W. Salter, and E. Billings from various localities in the same district and published in scattered reports.

Collections examined.

Some of the more important collections examined are from the following localities :—Paquette's Rapids, Fourth Chute of the Bonnechère, Clear Lake, Allumette Island, Westmeath, Fitzroy, Packenham, McNab, Stafford, Torbolton, Aylmer and Marlborough.

These faunal lists, together with the horizons they indicate, are intended to accompany Dr. Ells's report, in the form of an 'Appendix.'

Work on Kingston sheet.

Similar lists were prepared by me from the determinations made by myself in conjunction with Dr. R. W. Ells's work in the counties of Prince Edward, Lennox, Hastings, Addington, and also in the Kingston district during 1901. They include the following localities :—Kingston, Portsmouth, Rideau Station, Kingston Mills (Piloceras beds of Billings the zone of *Nanno aulema* Clarke), Kingston Quarries, Collins Bay Quarries, Westbrook Hill, Battersea (Vanluvin's mills of 1863 Report), Wolfe Island Quarries, Simcoe Island, Horse-shoe Island, Gildersleeve's Quarry, Picton, West Point near Sandbanks, Barriefield Hill, Deadman's Cove, Cherry Valley, Veesey Point, Ox

Point Quarries, opposite Mississaga Point and Belleville. Barytes Mine at Woodruff's, lots 16 and 17, Con. IV, also south half of the lot 16, Con. V and lot 15, Con. V, in the Township of Kingston, County of Frontenac.

Notes on collection of fossils, &c., made in 1886 by Mr. Eugene Coste and myself in Central Ontario were prepared by me in connection with Dr. A. E. Barlow's and Dr. Adams's work on the geology of that part of the province.

The species of fossil remains recognized in these collections were listed, the horizons which these predicated were also given, together with brief descriptions of the leading characters of the strata from which the fossils were derived. They include collections from a number of small outliers at Oak Lake, Round Lake, Breckenridge, Shenick and Vansikle. These notes were duly handed to Dr. A. E. Barlow and form a preliminary note on the fossils found in the Palæozoic formations of Central Ontario, along the line of contact between them and the Archæan.

C. Nova Scotia.

Work on Silurian faunas.

Considerable progress was made in connection with the descriptions and classification of the faunas in the Silurian system as developed in Nova Scotia, with special reference to the Arisaig section, Antigonish Co. In this I was assisted by Mr. C. Frank King and a few drawings were made by Mr. O. E. Prudhomme. Inasmuch as it is not only important but necessary to have proper illustrations made of the various species represented in the departmental collections, the writer desires to emphasize the urgency of the needs of illustrating the various types which form a series quite unique for this continent both as regards their assemblage and characteristics.

D. Division of Ethnology and Archæology.

Accessions to museum.

Some time was also spent in entering and cataloguing the various additions to the ethnological collection of the museum made during the year. These collections are obtained by the members of the field staff during their explorations or from the general public interested in the discovery and preservation of archæological records in Canada.

A list of the accessions made to the ethnological collections during the past year appears in another portion of this Summary Report.

E. Important accession to the Palæontological collections.

Cape Breton faunas.

An important collection of fossils of Cambrian age from Cape Breton was received in February, through Dr. G. F. Matthew of St. John,

New Brunswick, which serves to illustrate the various forms characterizing the geological formations of that portion of Nova Scotia. There is a striking resemblance between these faunas of Cape Breton and corresponding faunas in Wales. The following localities are represented: —Trout Brook, Mira River, Escasonie, McAdams shore, Barachois Station, I.C.R. cutting, Long Island, McInnis Brook, Gregwa Brook, Dugald Brook, McLeod Brook, Boisdale.

These form a valuable addition to our already extensive collection of Cambrian fossils. Owing to lack of space, however, it will be impossible to exhibit them until the already over-congested condition of the museum is relieved by the erection of a new building.

Mount Stephen fossils.

To Dr. G. F. Matthew the department is further indebted for determinations of species from the Cambrian of Mount Stephen, collected by myself in 1891.

Accessions to the palæontological collections of the department were recorded and many of the species represented determined in so far as the mode of preservation allowed.

Acknowledgement.

The department is again under obligation to Prof. D. P. Penhallow of McGill University, Montreal, for identifications of fossil plants sent to him for determination. Several collections which were in the hands of Sir William Dawson, in Montreal, at the time of his death, have been determined by Prof. Penhallow and forwarded to the department.

F. Bibliography of Canadian Geology.

Work on catalogue of Geological writings of Canada.

A number of additions to the 'Catalogue of writings on the Geology and Palæontology of Canada' in course of preparation and completion were made by me during the year, together with the references to the current literature on the same subjects for the year 1901. Copies of the 'Bibliography of Canadian Geology and Palæontology for 1901' were prepared during the year, and a number of abstracts of the leading works on the palæontology of Canada were prepared for Dr. K. Keilhack's 'Geologisches Centralblatt' in Berlin, Germany, for the Transactions of the Royal Society of Canada, and also for the International Catalogue of Scientific Literature in connection with the Royal Society of England, for which latter, Prof. J. G. Adami of McGill University, is the recorder. The whole catalogue to date counts upwards of five thousand references to Canadian publications on geology and palæontology.

G. Comparative studies while in Great Britain.

Studies in England.

When in Europe during the months of June and July, comparative studies of the faunas of the Silurian of Great Britain were carried on by me in the British Museum, Natural History Department, and in the Museum of Practical Geology in connection with the Geological Survey of Great Britain, as well as in the Museums of Cambridge and Birmingham Universities, also at Ludlow in Herefordshire.

At the last-named place, collections of fossils were made illustrating the faunas of the Lower and Upper Ludlow, the Tilestone and Old Red Sandstone. This region constitutes the classic ground of Sir Roderick Murchison's 'Siluria,' and the materials obtained will be of special value in defining the limits of the various geological horizons occurring in Eastern Canada and comparing their faunas.

Work on Mount Stephen trilobites.

While in London, some time was spent with Dr. Henry Woodward, of the British Museum, in examining a collection of trilobites and other fossils from the Cambrian of Mount Stephen, in the Canadian Rocky mountains, recently made by Edward Whymper, Esq.

H. Bibliography for 1902.

Bibliography.

During the year 1902, a number of papers bearing upon the geology and palaeontology of Canada, including some of the official reports published by this department, were prepared by me and published either in full or in abstract, as follows:—

Appendix. Preliminary lists of the organic remains occurring in the various geological formations comprised in the map of the Ottawa district, including formations in the provinces of Ontario and Quebec, along the Ottawa, pp. 49 G—77 G. Annual report, part G, Vol. XII. (Appendix to report by R. W. Ells) No. 741.

On *Belinurus Kiltorkensis*, Baily. American Geologist, Vol. 29, No. 3, p. 188. Minneapolis, March, 1902.

'The Great St. Lawrence-Champlain-Appalachian Fault of America and some of the geological problems connected with it.' Abstracts of Proc. Geological Society, London, No. 764. Series 1901-02, pp. 129-130, and 131 (discussion) London, Eng., June, 1902.

'Bibliography of Dr. George M. Dawson'. Canadian Record of Science, Vol. VIII, No. 8, pp. 503-516, Montreal, July, 1902. Separate issue, December 17, 1902.

'The Meso-Carboniferous age of the Union and Riversdale formations of Nova Scotia (Read before the Geological Society of America, Jan. 2. 1902) abstract. Science, Vol. XV, No. 368, p. 90, New York City, Jan. 17, 1902.

Notes on the Albany meeting of the Geological Society of America, held December, 1900. Canadian Record of Science, Vol. VIII, No. 7, pp. 471-477. Jan. 1902.

Annual Report of the Geological Section of the Ottawa Field-Naturalists' Club, for the year 1901-02. Addressed to the Council of the O. F. N. C. (Read Jan. 14, 1902) Ottawa Naturalist, Vol. XV, No. II, pp. 254-262, Feb. 5, 1902.

'The Union and Riversdale Formation in Nova Scotia.' (Discussion and correspondence.) Science N.S. Vol. XV, No. 375, p. 392. March, 7, 1902. New York City, N.Y., U.S.A.

The Cambrian age of the *Dictyonema* slates of Nova Scotia. Geological Magazine, Vol. 9. May, 1902, pp. 218-219, London, Eng.

Field-notes on the geology of the country about Chelsea, Que. Ottawa Field-Naturalists' Excursion, Chelsea, Sept. 6, 1902. Ottawa Naturalist, Vol. XVI, No. 7, pp. 149-151, October 6, 1902.

The Ordovician Succession in Eastern Ontario (Read before the Geological Society, America, Rochester, Dec. 31, 1901. Science, Vol. XV, No. 368. New York, Jan. 17, 1902, p. 82. abstract.) (With note on discussion by Bailey Willis, W. M. Davis and Hon. C. D. Walcott).

(*I.*) Notes on Drillings obtained in Six Diamond-drill Bore-holes in the bed of the St. Lawrence River at Victoria Cove, Sillery, eight miles above Quebec City, Quebec.

Through the kindness and courtesy of Mr. E. A. Hoare, engineer for the Quebec Bridge Co., Quebec, I had an opportunity afforded me of examining the drillings extracted from the six diamond-drill bore-holes which serve to indicate the character of the rock formations and materials occurring in the immediate vicinity of the abutments, anchor piers and main piers of the Quebec bridge now in the process of completion. The logs of the different borings were carefully preserved in boxes, and the following notes have been prepared by me, together with the sketch sections or illustrations accompanying them.

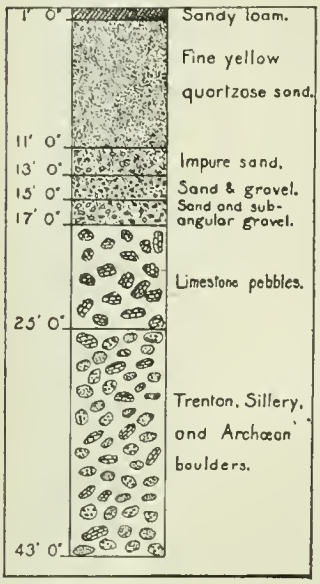
DESCRIPTIONS OF DRILLINGS.

North Side of the St. Lawrence River.

No. 1 Bore-hole. 43 feet. Anchor Pier, on centre line, 400 feet north of No. 3 bore-hole. Shore above water level.

Bore-hole No. 1.

After penetrating the surface soil which consists of a sandy loam one foot in thickness in which grains of clear quartz abound, the drill traversed ten feet of fine yellow quartzose sand below which occurred two feet or more of rather impure sand, two feet more of sand and gravel underlaid by two additional feet of sand and fine subangular gravel. Eight feet were then traversed, in which limestone pebbles predominate, thus reaching a depth of twenty-five feet. Between twenty-five and forty-three feet depth, boulders of Trenton limestone associated with boulders of Archæan crystalline rocks and pebbles of sandstones belonging to the Sillery grit formation occur. This bore-hole was not continued deeper.



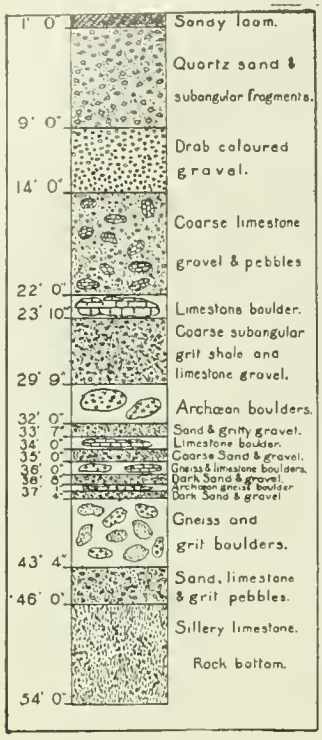
Bore-hole No. 1 North Side.

No. II Bore-hole. Fifty feet east of the centre line.

Bore-hole No. 2.

Drillings consist first of about one foot of sandy loam, followed downward by eight feet of quartzose sand rather coarser than the materials examined in bore-hole No. 1, together with a number of small subangular fragments of various kinds of rock and shale. Below this the drillings consist of five feet of a fine, well mixed, drab-coloured gravel underlaid by eight feet of coarse limestone gravel not unlike that met at the twenty-five feet depth in bore-hole No. 1. The next twenty-two inches were marked by the presence of a boulder of fossiliferous limestone underlaid by five feet and eleven inches of coarse and well mixed subangular pebbles of Sillery grit, Palæozoic limestone, shale, &c. In the next two feet three inches, a boulder of a dark crystalline Archæan basic rock occurs, probably dyke material, with garnet, &c., underlaid by one foot seven inches of coarse brownish gray quartzose sand associated with grains of felspar and grits. A

lime-stone boulder was met in the next five inches at a depth of thirty-four feet below which sand similar to that overlying the boulders of limestone just described above, occurred to a depth of one foot, underlaid by two boulders, one, consisting of sedimentary or Palæozoic limestones, the other, an Archæan gneiss boulder. Eight inches of a dark-coloured, quartzose sand holding fragments of gneiss, the grains of both being subangular, are underlaid by a boulder of Archæan gneiss five inches in thickness, below which three inches of dark coloured sand occurred similar to that above the last mentioned boulder. Six feet were then traversed marked by the presence of boulders, of gray gneisses of Archæan age, and others of Sillery grit, underlaid by some eight inches of dark sand similar to that just described, in which were imbedded pebbles of Sillery grit, and limestone of Trenton or Black River age. The next ten feet, reaching a depth of fifty-four feet, were drilled in solid rock of typical Sillery grit, similar to that which occurs in the face of the escarpment on the north side of the river at Victoria Cove, Sillery.

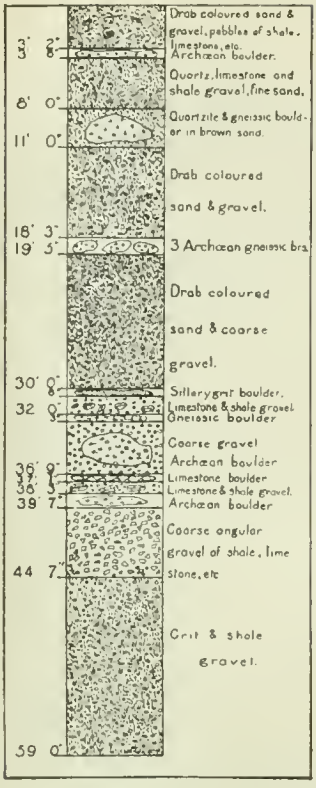


Bore-hole No. 2, North Side.

Bore-hole No. 3.

No. III Bore-hole, 480 feet from base line, on the centre line ; measurements taken from the river bed. Bed of River St. Lawrence.

Drillings at this point consist of three feet two inches of drab coloured sand and gravel in which quartz grains predominate and fragments of felspar, limestone, arenaceous shale (resembling shales of the Lorraine formation) associated with pebbles of Archæan and Trenton (Ordovician) age, are underlaid by a boulder of Archæan rock eight inches in thickness, below which are four feet four inches of angular fragments of quartz, limestones, shales, rather free from sand and well washed and preserved. The next three feet consisted of a white quartzite and biotite (gneiss or coarsely crystalline pegmatite) boulder imbedded in a rusty, chocolate coloured sand followed downwards by seven feet three inches of drab-coloured mixed fine and coarse



Bore-hole No. 3, North Side.

gravel below which were struck boulders of Archæan rocks consisting of light pinkish gray micaceous and hornblendic as well as biotite gneiss reaching to a depth of nineteen feet five inches. Similar gravel to that just described above the boulders of Archæan rocks then characterize the drillings for the next ten feet seven inches down to a depth of thirty feet where a six inch boulder of Sillery grit was traversed by the drill. The next eighteen inches were characterized by a mixed gravel of limestone and shale fragments whose average size was about one centimetre across, below which, according to the engineer, 'a piece of a boulder was picked up with the two-and-a-half inch pipe' measuring three inches across which consists of a pinkish Archæan gneiss. Four feet six inches of coarse, mixed, angular gravel with boulders of Archæan rock then follow under which occurred a boulder of fossiliferous limestone of typical Trenton age as may be inferred from the following lists of fossil remains recognized in its mass :—

Fossils.

1. *Orthis (Dalmanella) testudinaria*, Dalman.
2. *Leptæna (Plectambonites) sericea*, Sowerby.
3. *Rhynchotrema inæquivalvis*, Castelnau.
4. *Pachydictya*, sp.
5. *Monticuliporoid*, indt.
6. *Trilobite* fragment, too imperfect for identification.

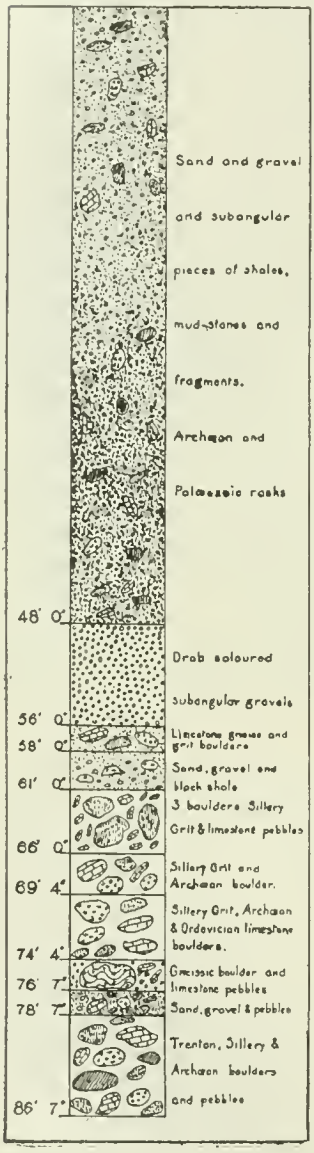
For one foot two inches below this Trenton boulder, similar gravel to that above the boulder occurred, followed downward by a boulder of Archæan crystalline rock to a depth of sixteen inches deeper, below which again, similar gravel was struck to a depth of forty-four feet seven inches. In the next fourteen feet five inches, the drillings gave a gravel of grit and shales. At the depth of fifty-four feet "the tube broke" and the bore-hole was abandoned.

South Side of the St. Lawrence River.

Bore-hole No. 4.

No. IV Bore-hole. Bed of river.

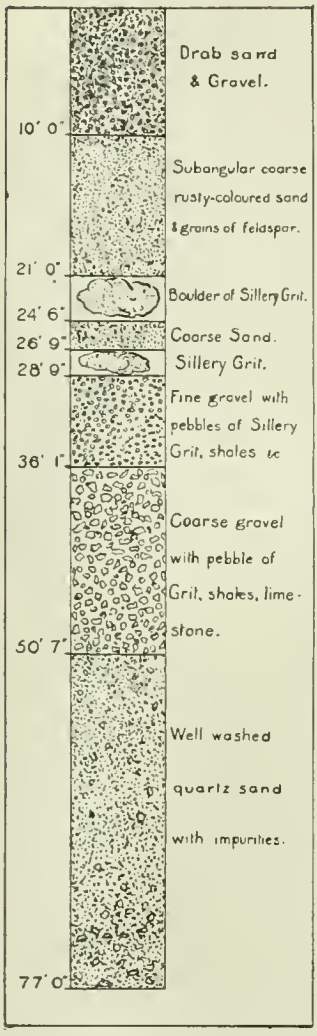
The drillings which were examined as representing the first forty-eight feet of the material obtained in this bore-hole consisted of small angular pieces of Archæan and Palæozoic rocks together with water-worn and well rounded and subangular pebbles of the same rock and gray shale or siliceous mudstone. These are followed downward for eight feet by drab-coloured and subangular gravel. Then two feet of somewhat angular gravel with rounded blocks of limestone and boulders of pinkish gneiss with Sillery grit were traversed. The next three feet showed the presence of a sand or gravel with drab and rather dark coloured black shale with which were associated pebbles of Archæan gneissoid rocks and fragments of limestone, shales, &c., at times very angular. Three boulders of Sillery grit or sandstone follow with limestone pebbles in the next five feet of the drillings examined. These were underlaid by five feet four inches of similar rocks and pebbles, these in turn being underlaid by similar strata to a depth of seventy-six feet seven inches, where sand and gravel to a depth of two feet are then penetrated in which pebbles of Trenton limestone, of Archæan gneiss, of Sillery grit, black shale, &c., occur, followed downward by Trenton, Archæan and Sillery boulders to the bottom of the bore-hole at a depth of eighty-six feet seven inches where the drilling was abandoned.



Bore-hole, No. 4. South Side.

No. V Bore-hole. Bed of river.

Drillings consist of drab coloured sand and gravel associated with Sillery grit materials to a depth of ten feet, followed by eleven feet of subangular and rather coarse sand with felspar fragments, in turn underlaid by a Sillery grit boulder three feet six inches in thickness below which, two feet three inches of a coarse sand, like that above, in which boulders of gneiss, limestone and grit occur. Bore-hole No. 5.



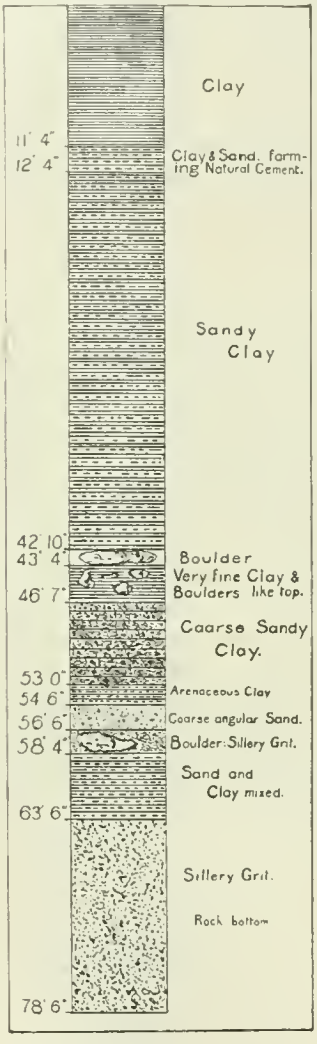
Bore-hole, No. 5. South Side.

One of the limestone boulders contained *Leptæna (Plectambonites) sericea*, Sowerby, indicating clearly the Trenton age of the mass. A typical Sillery grit boulder two feet thick was then struck, whilst the next seven feet are characterized by a mixed coarse and fine gravel with pebbles of clay slate, &c. This material prevails throughout the drillings downward to a depth of fifty feet seven inches whilst the next twenty-six feet five inches, are marked by the presence of well washed quartzose sand with grains of felspar, chlorite, &c., reaching to a depth of seventy-seven feet where the drill stopped.

Bore-hole No. 6.

No. VI Bore-hole. Close to south cliff. South Anchor Pier, 200 ft. from foot of cliff.

Eleven feet four inches of a fine grained homogeneous bluish gray clay characterized the first series of drillings obtained. Below this bed of clay a layer one foot in thickness of a more or less arenaceous and calcareous clay occurred, which, when exposed to the air forms a rather strong natural cement, the grains adhering to one another very firmly, followed by some thirty feet three inches of a more or less pure though at times arenaceous clay. At a depth of forty-three feet four inches a boulder was met with about six inches in thickness, below which occurred three feet three inches of a whitish gray very fine clay, in which a Sillery grit boulder was struck. This clay resembles the first or surface clay described in the drillings from this bore hole. Six feet five inches of a coarse sandy clay, mostly sand follow, below which is a similar stratum eighteen inches thick, forming a comparatively strong natural cement. Coarse angular sand follows two feet in thickness; then a Sillery grit boulder twenty-two inches in diameter, below which are five feet two inches of a coarse rusty sand, continuing to a depth of sixty-three feet six inches. The drill then traversed the solid rock to a depth of fifteen feet. No sample of the rock traversed, however, was present in the drillings, but it is very likely, and most probable that the Sillery grit rocks were struck at the depth of sixty-three feet six inches and penetrated to the seventy-eight feet six inch level, as given in the log accompanying the drillings.



Bore-hole, No. 6. South Side.

NOTE.

In connection with the building of the piers, abutments, &c., of the Quebec bridge, a number of interesting specimens were obtained and forwarded by Mr. M. P. Davis, contractor, through his manager, Mr. A. A. Stuart, to the department for examination, and as donations to the Museum. These include fossil plants obtained from excavations in the caissons both on the north and south slopes of the St. Lawrence river bed, Victoria Cove, Sillery, and samples of rock materials in which these were found imbedded at various depths from the surface. Besides these, a fine block of coarsely crystalline syenite or hornblendic granite employed in the construction of the piers and abutments from the quarries at Riviére à Pierre was also presented by Mr. Davis to the National Museum which serves to illustrate admirably the various characters of this building material so excellent for heavy masonry. Of this rock, Mr. Davis informs me that a single block was quarried which contained not less than 1,900 cubic yards, even and homogeneous in structure throughout. This single block thus weighed no less than 9,069,840 lbs., equivalent to 4,535 tons. The rock is of a light pinkish gray colour, quite pleasing to the eye, and takes a high polish, dresses and cuts well, constituting in a marked degree a highly desirable rock for heavy works and foundations.

Interesting specimens discovered.

Building stone.

Geology of the Site of the Quebec Bridge.

Early in October, with a view of determining the rock materials and geological formations upon which the abutments, anchor piers and main piers of the Quebec bridge rested, the Engineer in Chief and Deputy Minister of Railways and Canals presented a request that I should make a report upon the same. The result of the examination made by me from during field-work of 1901, of the drillings obtained from the diamond drill bore-holes, along the shore and in the bed of the St. Lawrence river at Victoria Cove, Sillery, eight miles above Quebec city, were verified and a report prepared, which has been transmitted to the Department of Railways and Canals and a duplicate copy of the same was deposited with the Acting director of this department, and reads as follows :—

Preliminary Report on the Geological Formations in the vicinity of the Quebec Bridge Piers and Abutments, Victoria Cove, Sillery, Que.

From the examination made of the materials obtained from within the caisson of the south main pier of the Quebec bridge, as well as of

the geological formations along the north and south shores of the St. Lawrence river at Victoria Cove, Sillery, Que., I am led to conclude that there are at least three distinct geological formations upon which the abutments, anchor piers and the north and south main piers rest, in the following ascending order of succession and of age :—

I. The Sillery grit formation.

II. The boulder clay or glacial drift formation.

III. The later Pleistocene formation.

THE ABUTMENTS.

The abutments of the Quebec bridge, both on the north and south shores of the St. Lawrence river, rest directly upon the Sillery grit formation.

This Sillery grit formation consists for the most part of greenish drab-weathering and greenish-gray sandstones or coarse grits frequently assuming the character of fine conglomerates with white quartz pebbles at time the size of peas.

These sandstones are sometimes slightly micaceous, and occasionally hold scales of green and black shale, and a few spangles of graphite. They are often calcareous. They usually present massive beds, and at Sillery, the type locality, many of the layers are quarried for building purposes, the stone being used largely in Quebec city. When broken, the rock presents a sharp, cutting edge and fracture, the grains of material composing the rock being strongly cemented together.

THE ANCHOR PIERS.

The north anchor pier rests directly upon the Sillery grit formation.

The south anchor pier rests in the upper strata of the later Pleistocene or boulder sand formation, which at this point consists for the most part of fine clay and sand filling the interstices of rounded, water-worn and sub-angular boulders of Archæan and Palæozoic formations, such as are seen strewn on the beach at low water, held in a matrix of stratified and well washed sand. The Archæan boulders are as varied in composition, comprising as the rocks of that primitive series the Laurentian and Huronian systems as they are developed in the province of Quebec, including many eruptives.

THE MAIN PIERS.

The materials obtained from within the caisson of the south main pier indicate the presence of both 'the boulder clay or glacial clay' formation, and the 'sand and gravel formation' or later drift.

The boulder clay or glacial drift formation occupies by far the greater portion of the area upon which the south main pier rests.

This 'boulder clay' is the characteristic 'till' or glacial clay of geologists, the 'hard-pan' of Canadian and other American engineers. It was deposited here at a remote period during the Glacial Epoch of geologists.

This formation consists of an indurated, compact, tough and unstratified rock-mass, composed of rounded, angular and sub-angular boulders and pebbles of Laurentian and Archæan gneisses and quartzites, associated with numerous boulders and pebbles of typical Sillery grit, sandstones and shales (of which materials the Sillery formation is composed), besides well-scored and striated or glaciated pebbles of limestone derived from the Trenton and Black River limestone formations of the north shore of the St. Lawrence, all cemented by an argillaceous paste, and held compactly together.

The materials, however, that were obtained from the two most westerly compartments within the caisson, consist of the 'boulder sand and gravel formation.' Rounded and sub-angular boulders and pebbles of Sillery grit and sandstones, of limestone, quartzite, gneisses and various other materials (not differing materially in character and composition from the boulders and pebbles constituting the boulder clay formation), are held in a matrix of sand, which, upon examination, appears to consist of well washed and fine grains of quartz, with occasional grains of hornblende and other impurities.

This sand and gravel formation is of later date than the 'boulder clay' or glacial drift formation, and was no doubt derived from the same, and is a stratified deposit.

THE NORTH MAIN PIER.

The north main pier rests upon the sand and gravel formation. From the materials obtained from within the caisson of this pier, it is evident that the boulders of gneiss, granite, quartzites and limestone, &c., which constitute this formation, have their interstices filled with sand and gravel, and that the whole is of sedimentary origin, of later date than the 'boulder clay or glacial clay' formation, and probably derived from it for the most part, being deposited as modified and stratified drift.

(Signed) H. M. AMI.

Geological Survey of Canada,
Quebec, Que., October 10, 1902.

The following communications from the Deputy Minister of Railways and Canals and from the Secretary-Treasurer of the Quebec Bridge Company, have been received in the department :—

I.

DEPARTMENT OF RAILWAYS AND CANALS.
OFFICE OF THE DEPUTY MINISTER AND CHIEF ENGINEER,
OTTAWA, ONT., October 10, 1902.

My dear Dr. AMI,

I have to acknowledge the receipt of your most able and interesting report on the geological features of the site and vicinity of the railway bridge in course of construction over the St. Lawrence near Quebec.

The information you have been good enough to supply me with, is precisely what I required, and I shall not be under the necessity of availing myself of your kind offer to supplement your report with further details.

Please accept my thanks.

I remain, dear Dr. Ami,

Yours sincerely and obliged,

(Signed) COLLINGWOOD SCHREIBER,
Chief Engineer.

II.

Dr. H. M. AMI, M.A., D.Sc., F.G.S.,
Commission géologique du Canada.
Ottawa.

Cher monsieur,—J'ai en effet reçu, hier du Département des Chemins de Fer, copie de votre excellent rapport sur les formations géologiques des excavations du pont de Québec, et vous remercie infiniment pour la part que vous avez prise à cet envoi.

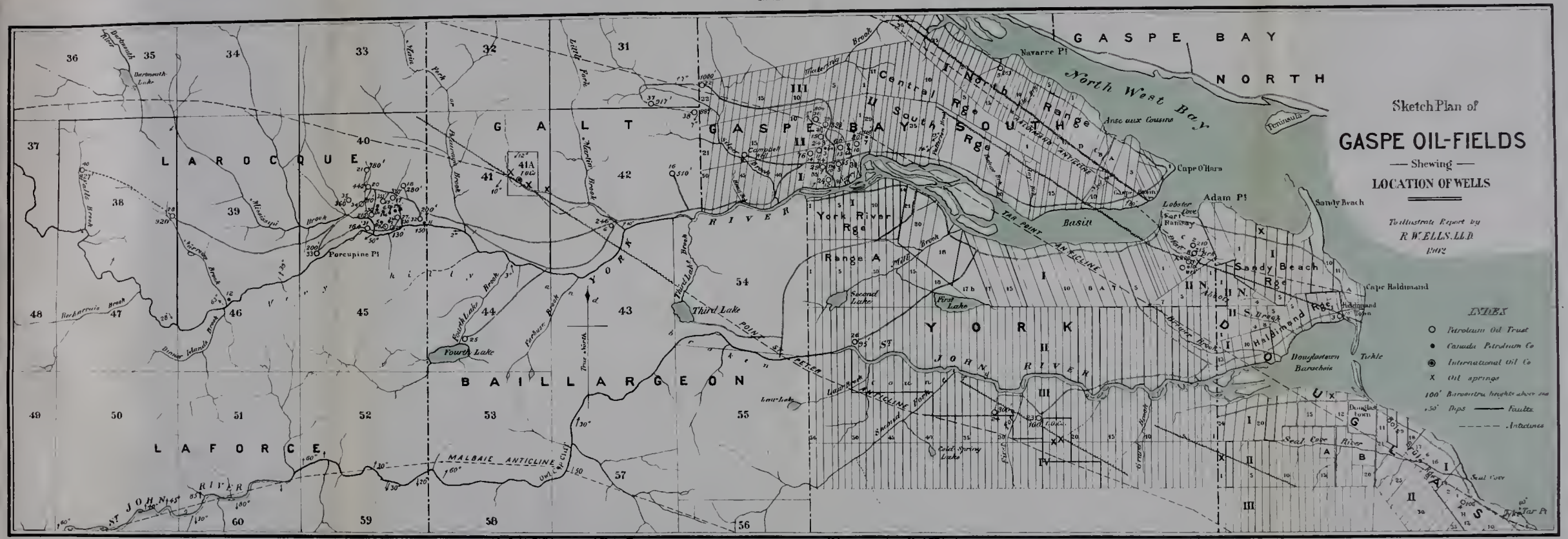
Votre bien dévoué,

(Signé) ULRIC BARTHE,
Secrétaire-trésorier.

Geological Survey of Canada

ROBERT BELL, Sc.D. (Cantab) LL.D., M.D., F.R.S., ACTING DIRECTOR

1902.



Drawn for photo-lithography by V. Perrin, C.E.

To accompany Part A. Annual Report Vol. IV

No 802

Price 10 cts

General Report on the Work of 1902.

(Dr. R. W. Ells.)

Office work 1901-1902.

The office-work during the winter of 1901-2, comprised a rough compilation of the notes and surveys made in the Kingston district, chiefly by my assistant Dr. R. Hugh Ells, B.A., and the preparation of the reports and geological maps pertaining to the Ottawa river area, west of Ottawa city, and comprised in map-sheets Nos. 119 and 122.

Work in the summer of 1902.

In May, 1902, a few days were spent in company with Dr. R. Chalmers, in an examination of certain points connected with the work of the late Mr. N. J. Giroux, formerly of this department, in the county of Glengarry, Ont. On June 10, I left Ottawa for Prince Edward Island, to examine the geological conditions in that province, relative to proposed borings for coal. This investigation extended from June 11 to July 17. The report on this examination is appended.

The Gaspé oil-field.

At the close of this work, I proceeded to Gaspé basin to examine the structure of the Gaspé oil-field where boring operations, looking to the finding of oil in paying quantities, have been carried on continuously since 1889, by several companies. The principal work has been done by the Petroleum Oil Trust, Ltd. of London, Eng., by the Canada Petroleum Co. of Manchester, Eng., and by the International Oil Co. of St. Paul, Minn. Every facility for a thorough investigation of the district was afforded me, as well as an examination of all logs of borings, pumping output, records, etc., connected with the operations of the several companies, copies of all which were obtained. All the localities where wells have been sunk were visited, and a copy of the office plan of the Petroleum Oil Trust was made, on which the sites of all borings are indicated. Attention was paid to the geological structure of the basin in which the oil occurs, and the presence of several important lines of faulting was determined. These evidently traverse the area from north-west to south-east and are sometimes found closely associated with the several lines of anticline in the district. A report on the work has been prepared, showing the nature of the work already done and the output of the several wells from the commencement of boring operations, which is also herewith submitted.

Work in New Brunswick.

At the close of my work in Gaspé I returned to New Brunswick on Aug. 12, and in company with Mr. H. S. Poole of Halifax, visited some points of geological interest relative to our work in the south-eastern portion of the province. In this connection we examined the works of the Intercolonial Copper Co. near Dorchester,

and the oil wells of the New Brunswick Petroleum Co. near Memramcook and in the township of Hillsborough. Several sections were made of some of the divisions of the Lower Carboniferous formation, and some time was spent in studying the rocks of the Upper Carboniferous formation as developed about Bay Verte and in the Tormentine peninsula, in order to, if possible, obtain certain data with regard to the thickness of that formation as seen on Prince Edward island.

Kingston area.

I returned to Ottawa on Aug. 26, and, after a week spent in the office, proceeded in company with Dr. Whiteaves, to the Kingston district in order to complete some details of work left over from the previous season. In this connection several localities of special interest were visited, as possibly affording characteristic fossils for determining doubtful points of structure in this area, and several good collections were obtained. We returned to Ottawa on Sept. 11 and on the 24th I again proceeded to New Brunswick, where, in company with Mr. Poole, an investigation was made of the Albert shale deposits found in Albert and Westmoreland counties, with a view to ascertain their value as a possible source of supply for oil by distillation. The report on this work is also submitted. I returned to Ottawa on Oct. 4.

Albert shales.

Work by Dr. Hugh Ells.

In connection with the work on the Kingston sheet my assistant Dr. R. Hugh Ells proceeded to that area from Gaspé on July 28. Surveys were carried on till Sept. 23, and these have been plotted ready for compilation. The area in which these were chiefly made is bounded on the east by the line of Hastings county and on the west by the line of the Kingston map-sheet, No. 112, which extends northerly from the Bay of Quinte, at a point about five miles west of the city of Belleville, through Madoc into the townships of Elzevir and Grimsthorpe. These surveys connected the work of the last season with that done in 1884 by Mr. E. Coste in the Marmora and Madoc district, and with that done by myself in 1896 in the townships of Clarendon, Barrie and Anglesea.

The Oil Fields of Gaspe.

Dr. R. W. Ells.

Early work in Gaspé.

The several reports on the rocks of eastern Gaspé in which area the oil fields of that district are located, date back to the year 1844. The examination of this area was first made on behalf of the Geological Survey by Sir W. E. Logan the director, and by his assistant, Mr. A. Murray. In the reports for that year mention is made of the occur-

rence of oil springs at several places in the district traversed by the lower portion of the Dartmouth, the York and the Douglastown rivers.

Devonian rock section.

The section published by Sir William Logan of the strata seen along the shores of Gaspé bay and basin gives a very fair description of the rock formations which occupy the eastern portion of the peninsula. They consist largely of grayish sandstones, interstratified with grayish and sometimes reddish or brown shales, and the whole thickness given for the rocks of the series, which are of Devonian age, is about 7,000 feet. Beneath these rocks is a series of limestones which have a thickness estimated at 2,000 feet. These con ain fossils in their upper portion which indicate a passage between the Devonian and Silurian systems.

The geological aspect of all these formations has already been very fully discussed in the preceding reports of this department, so tha it will not here be necessary to allude further to this aspect of the question.

History of oil investigation.

The cause of the investigation leading to the following report was the determination of the problem as to the economic occurrence of oil in this district. For some forty years investigations tending in this direction have been in progress by various companies, and several reports on the industry have been written. The early operations by boring were without practical result, but about 13 years ago renewed attempts were made to thoroughly explore the area. In this work, which is still being prosecuted, a large amount of money has been spent, largely in boring operations, and an amount of capital expended reported at over a million of dollars. Much of this work was done by the Petroleum Oil Trust with headquarters in London, England, and later by the Canadian Petroleum Co., with head quarters in Manchester. Other borings were made by the International Oil Co., of Minneapolis, and in all some 52 wells have been sunk, the depths in some cases reaching 3,700 feet.

Wells sunk.

Of these thirty-nine wells have been put down by the Petroleum Oil Co., t elve were sunk by the Canadian Petroleum Co., one by the International, and two others representing the borings of the early days were sunk, one at the summit of the ridge near Sandy Beach, the other inland about seven miles above Gaspé basin near the oil spring on Silver brook.

Comparison with rocks of Pennsylvania.

Comparisons have been made from time to time between the areas in Gaspé and those of the oil regions in Pennsylvania, and the state-

ment has been repeatedly made that the localities are geologically similar and the conditions for oil production practically the same. In so far as the geological horizons are concerned there may be some truth in these statements, since the oil territory in both cases is regarded as being in Devonian rocks. Otherwise the comparison fails in some important respects, as will be presently pointed out.

Early views as to the Gaspé oil basin.

Reference is made in the prospectus of the company (Petroleum Oil Trust) to opinions expressed nearly forty years ago by such eminent authorities as Sir W. E. Logan, Dr. T. Sterry Hunt, Dr. Robert Bell and others. In so far as any direct expression of opinion from these reports is concerned it is difficult to find anywhere any pronounced statement that the territory is eminently oil-producing. In point of fact no such opinion could then have been well put forward, for with the exception of the occurrence of small oil shows in the form of springs, and the fact that certain shale bands were of a bituminous nature, nothing further was then known. In those early days also neither the nature of oil-bearing rocks nor the conditions which govern the occurrence of oil in profitable quantities, were so clearly unerdstood as at the present day, so that the favourable notices thus quoted must be taken with a great deal of reserve.

Unfavourable conditions for oil.

The conditions governing the present occurrence of oil in all recognized oil-fields to-day show that the strata as a rule must lie in a nearly horizontal attitude, or affected by slight undulations, the amount of dip rarely exceeding two or three degrees. Such are the conditions seen in the oil fields of western Canada (Ontario), in the eastern and central states, and in the oil fields of Colorado, where however the geological horizon belongs to a much more recent date, viz., to the Cretaceous system. In no case has oil in paying quantities been found in America in rocks which are much tilted and broken, though indications of oil are quite common under such conditions and even small quantities are found on boring.

Anticlines.

The area in which boring operations have been carried on in Gaspé extends in a north-westerly direction from Seal Cove, on the south side of Gaspé bay, to Falls brook, a branch of the York river on the north, in a direct line, thirty-three miles distant. The district is traversed by several lines of anticlinals which have a generally north-west course from the shore of the Gulf of St. Lawrence. Of these, the most northerly comes to the coast at Cape Haldimand, which is between Sandy Beach and the Douglastown barachois or mouth of the St. John river. This has been named the Haldimand anticline.

Tar point anticline.

Going south, the next line of anticline comes to the coast, near what is known as Tar point, on the south side of Gaspé bay and is known as the Tar point anticline. The third, known as the Point St. Peter anticline, comes to the sea at a point between Malbay and Gaspé Bay, while a fourth comes to the shore at or near Percé.

Good sections are afforded along the south side of Gaspé Bay from Point St. Peter north-west to Gaspé basin. Fairly good exposures are also seen along the several rivers which traverse the district from the west, including the Dartmouth, the York and the St. John or Douglastown.

Rough character of country.

The surface of the country, a short distance inland, is usually very rugged, with high ranges of hills, reaching in places, elevations of 1,200 to over 1,500 feet. The country itself, is generally densely wooded and except along the lower portion of the several rivers entirely unopened for settlement. Owing to forest covering, and the heavy deposits of drift, which are found over much of the area, good rock exposures are rarely met with off the lines of the principal streams. On many of the side streams also, the banks are composed of clay, gravel or other drift. The thickness of these drift deposits has been found in some of the boring locations to be nearly 100 feet.

Inclined strata.

An examination of the shore section shows that horizontal strata are rarely found. Generally the sandstones and shales are tilted at a comparatively high angle, in some places as much as 65 to 70 degrees. Faults are found at intervals not only along the shore section, but can be readily recognized on the rivers, and the strata are here in places at angles of 80 degrees.

The course of the several anticlines has been traced by numerous traverses as carefully as was possible. The underlying limestones have in many cases been assumed to represent these, especially where sandy strata are seen on either side. On the south side of the Dartmouth, the sandstones are inclined at angles as high as 80 to 90 degrees, and probably an overturn of the formation occurs between L'Anse à Cousin and the mouth of the Dartmouth. Faults are also observed at several points.

Faults.

Of these faults, at least four well-defined ones occur on the shore section between Point St. Peter and the mouth of the Douglastown river. On the shore at the Narrows to the inner basin at Gaspé village, there is also a dislocation in connection with the anticline by which the beds are tilted at a high angle.

Inland this faulted character is observable at several points. Thus near the International Co's boring on section 41, north of the York river, a well-defined break is seen, by which the underlying limestone of Silurian age is brought sharply against the Devonian sandstone. At this break there are several oil springs, one of which is of large size, and these appear to owe their existence to this line of fracture. This line of fault can be traced south-east across the York and the St. John rivers, separating sharply the limestones from the sandstones and it is possibly continuous to the shore north of Malbay.

Oil springs in fault lines.

It is very probable that most of the oil springs of the district are situated along lines of fracture, and in fact this feature is well seen at several points. The break which crosses the upper part of Gaspé basin at the village, is probably continuous to the north-west along the south side of the range of hills which occupy the area between the lower part of the York river, and the lower part of the Dartmouth, and a small oil-spring is found on this projected line of break, about three miles west of the village. From the high dips at the oil-spring south of Sandy beach where strata are inclined at an angle of 70 degrees, it is probable that this break continues eastward near the line of the Haldimand anticline, since there is also a spring near the shore on its course, just inside the head of the bar at the Douglastown barachois.

From the abrupt changes of dip seen along the St. John and York rivers at several points where the amount of inclination suddenly changes from 10 to 80 degrees, it would appear that these breaks are more frequent than has usually been supposed. In such a folded, inclined and faulted series of strata, therefore, one would scarcely expect to find highly favourable conditions for a productive oil-field, and this inference appears to be well sustained by the investigations of the last 12 years.

Conditions for the occurrence of oil.

In considering the question of the occurrence of oil in Gaspé in paying quantities, therefore, several conditions must be observed. First, the occurrence of true oil-bearing strata; 2nd, the favourable position or otherwise of such strata for the retention of oil if such ever existed in quantity; 3rd, the occurrence of faults and overturned rocks; 4th, the occurrence of anticlines along which the oil is supposed to occur.

As to the first proposition it may be said that while oil springs are found at several points throughout the area, the rocks of the formation, as seen along the numerous coast and river sections, do not display oil at any point with the exception of the small quantities found in portions

of the dyke of intrusive rock which penetrates the Devonian sandstones near Tar Point. These sections furnish a good representation of the sandstones and shales of the formation from the bottom to the top. At the same time it must be admitted that oil in small quantity does exist in some portion of these sediments, since it has been found in several of the bore-holes.

In the second place the tilted and faulted character of the rocks throughout the greater part of the Devonian basin, both of eastern Gaspé and along such rivers as the Bonaventure and the two Cascapedias to the west, are unfavourable to the occurrence of oil in quantity, while the several faults which traverse the strata along which the oil springs presumably occur would serve to carry off along certain lines any small quantities of oil that might locally occur.

And, thirdly, the anticlines, instead of being in low, gently inclined strata are usually sharply defined; the inclinations of the opposing sides are often steep and the axes probably complicated by faults, as can be seen in several cases.

Anticlinal theory.

In the course of the recent examination of the area special attention was paid to the occurrence of such features as faults and anticlines in order to see if the theory usually put forth that the productive oils are found along anticlinal crowns was maintained in this area. As a result it may be stated that such application cannot be made for the Gaspé district. A number of deep bore-holes were sunk on or very near the line of axis of several of the anticlines without finding oil at all, or in but very small quantity, while some of the wells which were put down near the centre of the synclines are recorded as much more productive. In fact from the records of the numerous wells those bored in the central portion of the basins are practically the only ones that have yielded oil in appreciable quantity.

Kinds of oil found.

The oils found are of two kinds, viz., a light amber oil which has been obtained from the upper or sandy portion of the formation, and a dark green heavier oil which was obtained usually from the lower or calcareous underlying rocks. It may here be stated that the supposed horizon of the oils would be found about the contact of the sandstones and limestones; and while in some wells there was a small showing at such places, in many cases this line was passed without any result as to finding the oil. Under such circumstances the difficulty of locating wells, with any certainty of finding oil in paying quantity, may be readily imagined.

Acknowledgements.

In my investigation of the district I may state that every facility was afforded me by the resident agent, Mr. Sutton LeBoutillier, and by the resident engineer, Mr. C. R. P. Hillary. I was also supplied with logs of all the wells from the commencement of boring operations, and in cases where the pumping plant was in place the wells were pumped for a time and the present daily capacity of each ascertained.

Records of Borings.

Boring record.

My work was also greatly facilitated by the use of a plan in the company's office in which all the wells were located and which was placed at my disposal. The resident manager of the Canada Petroleum Co., Mr. Wheeler, also rendered me great assistance, giving me all possible information as to the logs of their wells and fixing their position on the plan of the district. To all these gentlemen our thanks are due for the courtesies extended.

The Sandy Beach wells.

The earliest boring made in the district for oil was located on or near the crest of the Haldimand anticline about one mile south of the shore above Sandy Beach, at an elevation of 210 feet above sea level. This was in close proximity to the oil spring which occurs at that place.

This first boring was made in 1866 by Messrs. Conant and Hubbard, well drillers from Pennsylvania. Their log is given in the prospectus of the Petroleum Oil Trust, and may be briefly summarized thus:—

First well sunk 1866.

Drift, about 25 feet. In this a small quantity of oil, probably from the adjacent spring, was found in the gravel.

In the boring proper a small vein of oil and gas was reported at 83 feet from which about one gallon of the former was obtained. At 238 feet a small showing of thin light oil with salt water was met, and traces also occurred at a depth of between 425 and 430 feet, not sufficient, however, for pumping. At 444 feet oil was again reported and again at 600 feet. At 684 feet the tools were lost, and after several unsuccessful attempts to recover these the boring was discontinued. A quantity of oil was obtained, by pumping which, it is said, in nine hours produced 25 to 30 barrels of oil, of 'a beautiful dark greenish colour.'

Work of the Petroleum Oil Trust.

No further attempt to exploit this area was apparently made until the advent of the Petroleum Oil Trust. On November 19, 1889, boring was commenced and continued with many interruptions to January, 1891, when a total depth of 2,430 feet was reached. Much delay was caused by heavy flows of salt water at, 1,325 ft. and again at 1,700 ft., which

required casing off. Oil was reported in small show at 2,048 ft. and again at 2,400 feet, and pumping was resorted to but no oil was found.

Three wells were sunk by the company at this place which are known as wells No. 2, 3 and 8.

Well No. 2. Well No. 2 was commenced on May 1, 1890. The depth reached on October 16, was 2,582 ft. Water was struck at several points, and three small shows of oil were reported at about 500 feet, at 965 feet, and again at the bottom, but all of no importance. The well was shot four times, viz., at the bottom, at 2,036 feet, at 1,200 feet and at 900 feet, but no oil was obtained, and no further work was done.

Well No. 3. The log of well No. 3, located at the Douglastown beach near the head of the Bar, is very incomplete. It was commenced apparently about October 14, 1890, and reached a depth of 2,225 feet. Salt water was found at 1,304 feet and no oil was reported.

Well No. 8. Well No. 8 was begun on November 8, 1892. Salt water was struck at 745 feet, at 936 feet, at 1,175 feet and at 1,450 feet, and was successfully cased off. The rig was burned down and subsequently rebuilt, but the difficulty found in sinking was such that the hole was soon after abandoned and no oil was recorded. At present there is no oil in any of these wells.

Rocks passed through. It may be said that all these four wells, Nos. 2, 3, 8 and that of 1866, are located within a very limited area. The rocks are highly inclined and there is probably a fault in this direction. The record of rocks passed through is very incomplete, except that they consist of grayish sandstones and shales with some purple or reddish bands, similar to the sediments seen in the coast section at Cape Haldimand. Being situated on the crown of the Haldimand anticlinal and in the immediate vicinity of one of the largest oil-springs in the district it was supposed that the locality was especially favourable as regards the finding of oil in paying quantity. The expectation however, was not realized.

Well No. 4 at Tar cove. Well No. 4 is situated on or near the Tar Point anticline. The locality is about 100 feet above sea level and about half a mile from the shore of Gaspé bay.

The log is incomplete as regards details. The rocks passed through were all sandstones with beds of shale, such as are seen along the shore east of Seal Cove. The drilling is reported as good to a depth of 2,540 feet when hard rock was encountered, and in this it was continued to a total depth af 2,970 feet when the tools were stuck and

could not be recovered. A small show of oil was reported, though of no importance, at 2,215 feet, but there was nothing to warrant further investigation at this locality apparently, and no further attempts were made at this place.

Well No 5, west of Gaspe village.

Well No. 5 is the first of a series bored in an area about 7 miles west of Gaspé village, on the north side of the York river. It is near the line of the main road up the river leading to Silver brook. The log is very incomplete and the date of boring is not stated except 1891 92. The total depth reached was 2,640 feet. At 1,850 feet a small show of oil was reported and at 2,360 feet a small show of green oil also. Limestone was struck at this depth and continued down to 2,458 feet; and on September 27, 1891, the tools were lost in the hole, and not recovered. No oil was found below 2,360 feet. In January, 1892, it is reported that four barrels were bailed out. The well was shot on October 25 of that year without any satisfactory result, only about two barrels being pumped on November 9. It was again shot on December 11, 1893, but gave no further results. This well evidently passed the contact between the sandstone and limestone, at which horizon it was supposed oil would be found. On December 23, 1893, this well is said to have pumped oil, after being shot, at the rate of 2 quarts per day, and the same amount on January 5 and 6, 1894. A small quantity in the water in stand-pipe about 25 feet from the top.

Wells No. 6 and 7.

Well No. 6 was located on the bank of a small brook about 12 miles west of Gaspé village, or 5½ miles west of No. 5. It is in close proximity to a ridge of limestone which crosses the road a short distance west of the location, but though a depth of 3,640 feet was reached, this limestone was not found. It is probably near a line of fault which extends in a south-east direction from the International Co's. property situated about three miles north-west where this fault is well defined, the limestone being brought directly against the sandstone and the dip of the fault being to the south-west. The rocks in this boring are shales and sandstones and only a small show of oil of no importance was recorded at a depth of 2,950 feet. The hole was begun on January 25th, 1892, and work closed on October 22nd of the same year. Salt water was struck at 395 feet, at 440 feet and again at 590 and 690 feet, to which depth the well was cased.

Well No. 7 is in the same area as No. 5 and about half a mile west. It was commenced on October 18th, 1892, and finished on November 21st of the following year. The depth reached was 2,867 feet and the limestone was struck at 2,385 feet, at which point a small show of oil and salt water was struck. Oil was also found at a depth of 2,589

feet and again at 2,650 feet. The boring in the limestone was very difficult as the rock is generally very hard and silicious. From the samples it appears to be a hard silicious dolomite. The well was shot with 200 quarts of nitro-glycerine at 2,589 feet on November 29th, and pumping was commenced on December 15th. Water only was pumped at first, but on December 16th, an amount of oil estimated at 20 barrels was obtained. The pumping log of this well is interesting. On December 19th it pumped about three barrels; on December 23rd an average of about a half a barrel per day. In 1894, January 5th and 6th, this well is said to have yielded at the rate of a half a barrel per day, and on February 14th the bottom hoop of the tank in which the oil was stored burst off and a quantity of oil, estimated at 200 barrels was lost.

Well No. 9. Well No. 9 is the only one bored on the north side of the Haldimand anticline. It is situated about one-half mile south of the Dartmouth river and 4 miles west of Gaspé village. The hills to the south are high and composed of limestone, the strata in the vicinity are steeply inclined and near by are faulted and apparently overturned. The well was begun on March 7th, 1894, and reached a total depth of 2,719 feet. The boring continued in sandstone and shale the whole distance. Water was struck at depths of 495 and 560 feet, but no sign of oil was found.

Heavy fault. From the position of the limestone hill to the south of this locality it is evident that a heavy fault cuts across the area and brings the two sets of strata in contact at a high angle. The location of this boring was a very bad one.

In the area in which wells Nos. 5 and 7, already described, are located, no less than 13 wells were bored. Of these nine were sunk by the P. O. T. and four by the C. P. Co. They are all situated in a space of about one square mile on the north side of the York river, as per plan, and are for the most part south of the Tar Point anticline, though wells Nos. 15 and 36 are situated near its crest.

Wells No. 10 and 11. Well No. 10 was commenced in January, 1895. It reached a depth of 1,400 feet, the rocks for the entire distance being sandstone with occasional bands of shale. Water and gas were struck at 775 feet and small shows of oil at 1,108 and 1,170 feet. On October 26 the well was shot with 160 quarts of nitro-glycerine at 1,400 feet. No oil was taken out and the well was abandoned on account of water and caving of the sides. This well was near the supposed line of the anticiline. A small quantity of green oil now in stand-pipe.

Well No. 11 is situated about one mile west of the last and about half a mile south of the anticline. Work was started on 29th December, 1893, and the hole was bored to a depth of 2,957 feet, which was reached March 23th, 1895. Sandstone extended down to 2,080 feet, at which point the limestone was struck. At 2,220 feet, in the limestone, gas and oil were reported, and an explosion took place by which the rig was burned down on May 2nd, 1894. The rig was rebuilt on June 24th. Oil flowed and a supposed large quantity was lost during the night, estimated at some hundreds of barrels. The boring was resumed and a small show of oil was again reported on September 7th at a depth of 2,485 feet. The limestone continued to the bottom of the hole without finding any more oil. The rig was again burned on May 13th, 1895, and rebuilt. The well was shot twice in the following September without any beneficial result, and subsequent pumping in October yielded a very small quantity of oil. A little oil on surface of water in stand-pipes, about four feet from surface.

Wells No. 12 and 13.

Well No. 12 is located near the north bank of the York river and about one mile south of the line of the Tar Point anticline. It was commenced in January, 1894, and finished on May 4th at a depth of 3,002 feet. It passed through sandstones and shales for 2,550 feet when the limestone was first struck, and this rock continued to the bottom of the hole. A very small show of oil was reported at depths of 2,075 feet and at 2,837 feet. The well was plugged at 2,830 feet for shooting. It was not pumped and no oil was found worth recording. A very little oil now in stand-pipe on the water about ten feet from top.

Well No. 13 is located a short distance north of the main road and about half a mile south of the anticline. Drilling commenced on September 1st, 1894, and continued to December 26th, when a depth of 2,050 feet was reached. The limestone was not struck and no oil was found. At the bottom the well was overflowing with salt and sulphur water which rendered further drilling impossible. Now flowing salt water.

Wells No. 14 and 15.

Well No. 14 is situated three-quarters of a mile west of the last and about three-quarters of a mile south of the anticline. It was commenced May 4th, 1895, and reached a depth of 2,775 feet on February 13th, 1897, nearly two years being spent on the work. The limestone was struck at 2,265 feet on October 19th, 1895, and the subsequent drilling was very slow, the limestone being very hard. Neither oil, salt water or gas found in this hole, but there is a small quantity of green oil on the water in stand-pipe.

Well No. 15 is situated about $\frac{1}{4}$ mile south of the anticline. It was commenced on April 1st, 1895, and reached a depth of 2,012 feet on August 17th, the limestone being struck at 1,880 feet. At this depth it is said that about 50 barrels oil were bailed out. Well torpedoed at bottom and fitted for pumping. Yielded continuously about 7 to 8 gallons oil for several months. In spring of 1901 gave about two gallons per day. All work discontinued and nothing done since. A small quantity of green oil on the water in stand-pipe, about six feet from surface.

Well No. 36. Well No. 36 is the most northerly in this area. It is located about $\frac{1}{8}$ mile north of the anticline, the position of which can be readily seen on the road up the mountain, the elevation of the starting point being 804 above sea-level. Work was begun on July 9th, 1901, and continued to December 4th, to a depth of 1,950 feet. The limestone was struck at 1,780 feet, the rock above this being, apparently, for the most part sandstone. Salt water was struck at 1,065 feet, and was met with at intervals to the bottom. No trace of oil was found in this hole.

Wells of Canada Petroleum Co. Of the four wells bored by the Canada Petroleum Co. at this place numbered 3, 7, 9 and 10, the following notes were furnished me by the resident manager, Mr. Wheeler.

Well No. 3, started August 15th, 1899, finished November 11th, reached a depth of 2,240 feet. Limestone struck at 2,230 feet. No oil.

Well No. 7. Date of boring not given. Depth 2,063 feet. Limestone at 2,046 feet. Oil reported at 1,945 feet. Took out from 2 to 3 barrels only.

Well No. 9. Depth 2,226 feet. Limestone at 2,212 feet. No oil found, but water in large quantity at 1,132 feet.

Well No. 10. Depth 2,383 feet, limestone at 2,360 feet. No oil found in boring, but in July, 1901, a quantity reported at 3 barrels, was obtained, and there is a little at present in the stand-pipe.

Wells of the 2nd group. Another group of wells is situated on block 40, on the north side of the York river, near the junction of the Mississippi branch. This group included about 23 wells, the of which are comprised in an area of about one square mile. Of these, the Canada Petroleum Co. put down seven. A tank for a pumping station was also erected at this place, and connected by a pipe-line eleven miles long, with a refinery which is located on the bank of the river, about seven miles west of the village of Gaspé Basin, in the group of wells just described.

Campbell well and well No. 16.

Several intermediate wells were located between these two principal areas, of which that known as Campbell's, on the bank of Silver brook, was one of the first bored. It was located near the oil spring which is described in Logan's report as occurring in that district. No log of this well exists, but apparently no oil was found in the boring, which is placed at some distance south of the line of the Tar Point anticline.

Well No. 16, bored by the Petroleum Oil Trust, is about two miles west of Silver brook, and about one mile north of the main road up the York river. It is near the foot of a high ridge which rises to the north. The elevation is 510 feet above sea-level. The boring commenced on January 26th, 1895, and ended August 17th of the same year. The depth reached was 2,995 feet, and the limestone was struck at 2,880 feet. Only one small show of oil was found at a depth of 2,664 feet. Not much salt water was met with, and no oil was taken out. This place should be about the middle of the syncline between the Tar Point and Point St. Peter anticlines.

Well No. 17.

The wells of the second group lie to the south side of the latter anticline. Of these, well No. 17 was commenced on March 30th, 1895, and finished on June 26th, 1897, over two years being occupied in the boring. The hole reached a depth of 2,550 feet, the limestone being struck at 2,000 feet. Great difficulty was experienced in boring the limestone, which caused the delay. In all, only one and a half barrels of oil was taken from this hole, though oil was reported at depths of 1,013, 1,045, 1,200 and 1,286 feet. The reported bailing of oil was from a depth of 2,348 feet.

Wells, No. 18 and 19.

Well No. 18 was begun on August 24th, 1895, and finished on June 9th, 1896, at a depth of 1,960 feet. The limestone was struck at 1,865 feet, the rocks to this depth being sandstones and shales. A very small show of oil was found at 990 feet, and at 1,095 feet. This well was shot with twenty-five quarts of nitro-glycerine, but no oil was found in the boring. There is now a small show at the top of the stand-pipe.

Well No. 19 is located about three-quarters of a mile north of the York river, at an elevation of 355 feet above sea-level. It was commenced on November 7th, 1895, and finished on April 16th, 1896, at a depth of 2,340 feet at the contact with the limestone, the boring being in sandstone and shale all the way. Salt water was struck at 700 feet and again at 1,500 feet. The first small show of oil was found at 1,185 feet, a second show at 1,792 feet, and a third at 2,050 feet. No oil was found at the contact with the limestone. On August 1st, after taking out about ten barrels of amber oil, the well was shot with 100 quarts of

nitro-glycerine, at a depth of 2,040 feet. On August 5th, after cleaning, the well produced about one-half barrel of oil per day for a time, and on August 25th, it was tubed and connected with tank. It is reported to have yielded one-half a barrel of oil per day for a few days, which then reduced to ten gallons, and in 1902, (August) yields by pumping, from two to three gallons per day.

Well No. 20. Well No. 20 is situated about half a mile north-west of the last, and nearer the anticline. The elevation at the surface is 442 feet. The boring commenced on January 1st, 1896, and continued to June 30th at a depth of 2,050 feet in sandstone, when a small vein of oil and gas was struck. It was afterwards continued to a depth of 2,173 feet in limestone. It was shot with 100 qts. of nitro-glycerine at 2,059 feet without beneficial results, only half a barrel of oil being bailed in 24 hours. On August 5th it was tubed and pumped, and gave about five gallons a day for a time, and in July, 1902, it yielded from half to one gallon per day. Salt water was struck in the boring at 595 feet. This oil seems to have been met near the contact of the sandstone and limestone.

Wells, No. 21 and 22. Well No. 21 lies about half a mile north of No. 20, and near the axis of the anticline. The elevation is 780 feet. Boring began on April 24th, 1896, and ended on June 12th, 1897. The limestone contact was met at 1,555 feet where there was a strong smell of gas and a very small trace of oil which was of no importance. No salt water was reported, and the drilling in the limestone was very difficult. The boring reached a depth of 1,830 feet without any further showing of oil and the work was abandoned. The limestone throughout is reported as fine-grained and very hard. No oil was extracted.

Well No. 22 is located in the eastern area, north of group one, near the crest of the Tar Point anticline and at an elevation of 1,000 feet. This boring proceeded in sandstone and shale to a depth of 2,750 feet when the limestone was reached. It was then carried down to a total depth of 3,130 feet in the limestone. The boring began on April 1st, 1896, and ended on July 22nd, 1897. No oil was observed at the contact and the first small show was met at a depth of 2,945 feet, with water and gas. On March 20th, 1897, a large vein of gas and oil was reported at the contact with a white sand at a depth of 3,105 feet and strong brine was struck at 3,107 feet. A pumping plant was then installed and operated till June 19th. The pumping log shows some points of interest. Thus, on April 5th, a good show of oil was found in water. On the 22nd half a barrel of oil was taken out, and on the 23rd four barrels of oil. On the 26th three barrels of oil, and on the 29th the same amount. On the 30th only two barrels of oil were obtained,

and on May 3rd this was reduced to one barrel, on the 4th to half a barrel, on the 8th, it yielded one barrel and a half. On the 15th the oil lessened in quantity and was less than half a barrel per day. On the 28th it yielded one barrel of oil, on the 29th three barrels, on June 5th, two barrels, and on the 12th one and a half barrels. On the 16th only a pail of oil with water was obtained and drilling commenced again after pulling tubing. On July 13th more water was struck, and on the 22nd the well was abandoned. This well apparently tested the anticlinal axis better than any of the previous ones. The location was near the upper part of Silver brook.

Well No. 37. In the vicinity of the same anticline two other wells were put down at a later date, viz., Nos. 37 and 38. Of these No. 37 was situated near the axis of the anticline but a short distance on the south side. The elevation was 917 feet and the thickness of the drift was 73 feet. Bands of hard limestone were struck at 455 feet and continued down to a depth of 645 feet. Below this to the bottom of the hole, at a depth of 2,600 feet the rocks were all sandstone, which were calcareous for the last 200 feet. A small showing of green oil was reported at 2,218 feet, from which about two barrels were taken, but none was found below this point. The boring began on September 18th, 1901, and ended on March 15th, when the work was discontinued. The occurrence of the limestone in the upper part of this boring is interesting. Salt water was struck at 927 feet and 1,875 feet, and gas at 1,925 feet.

Well No. 38. Well No. 38 is located about one mile east of the last at an elevation of 887 feet, and also on the south side of the anticline not far from its crest. The boring began on November 20th, 1901, and ended on March 14th, 1902, at a depth of 2,089 feet. The boring was in sandstone throughout, but the rock was somewhat calcareous in the last 50 feet. A very small show of oil was reported at a depth of 2,030 feet, which was the only indication observed. Salt water was struck at 955 feet, and much trouble occurred from this cause at 2,000 feet, so much so that operations were suspended. No oil was taken from this well and the underlying limestone was apparently not reached.

Wells, No. 23 and 24. Two holes, Nos. 23 and 24, were put down on the south side of the St. John river about seven and eight miles west from the mouth. The drift in the first was heavy, amounting to 52 feet. Drilling began on Aug. 4th, 1896, and ended at a depth of 1,790 feet on May 26th, 1897. The sandstone continued down to a depth of 1,480 feet to the limestone. Heavy salt-water was struck at a depth of 1,670 feet, and the well was cased to 1,690 feet. Owing to the difficulty of penetrating

the limestone boring was abandoned at 1,790 feet and no trace of oil was noted. The elevation of this well is 160 feet above sea-level.

Well No. 24 is about one mile west of the last. The elevation is 300 feet and it is a short distance north of a high ridge of limestone. It was commenced on January 10th, 1896, and work ended in May at a depth of 1,230 feet. The sandstone was very thin at this place and the rock was mostly a very hard limestone to the bottom. The hole having become crooked was abandoned on account of the difficulty in penetrating this rock, No trace of oil was observed in this boring, and it is possible that a line of fault running between these two holes, traverses the area in a south-east direction.

Well No. 25 is located at Fourth lake, about midway between the St. John and the York rivers, on block 44. It should be about the central portion of the area between the Point St. Peter and Malbay anticlines. The elevation of this hole was not taken, but is not far from 200 feet. The depth of the drift at this place was 63 feet. Work was commenced on December 2nd, 1895, but owing to difficulty in getting to bed rock, drilling did not commence till August 14th of the following year. It continued till July 10th, 1897, when a depth of 1,230 feet was reached. The log gave sandstone for 605 feet to limestone, which thence continued to the bottom. There was no show of oil in this boring. Well No. 25.

Well No. 26, situated near the St. John river at an elevation of 96 feet, was begun on February 13th, and finished on September 29th, at a depth of 2,900 feet according to log, though samples of borings are on file to a depth of 2,978 feet. No oil was found in this hole. Sandstones and shales continued down to 2,200 feet to the limestone, and from this to the bottom the rock was, for the most part, limestone with occasional sandy layers. A little gas was struck at 1,700 feet, and also at 2,550 feet. The hole ended in sandstone and limestone according to the samples, but the log registered limestone only. Wells, No. 26 and 27.

Well No. 27 is located in the second group of wells, north of York river. It was commenced on February 28th, 1897, and bored to a depth of 1,467 feet in sandstone with occasional bands of pebble conglomerate, the pebbles being mostly white quartz. At this depth a vein of oil and gas was struck in the conglomerate which is said to have flowed three times before being plugged. This oil was all lost. The well was subsequently carried down to a depth of 2,200 feet, and a considerable quantity of oil taken out and tanked. These tanks were burned in June, 1898, the quantity of oil destroyed being estimated at several hundred barrels. After deepening the hole no other large

quantity of oil was found though the limestone was reached, and the well is now pumping (July, 1902) about two gallons per day. The location is about one mile south of the supposed crest of the Point St. Peter anticline, and the elevation is 230 feet.

Well No. 28. Well No. 28 is situated on the line between blocks 38 and 39, near a small stream which flows into the York river. It is about five miles west of the last, and about two and a half miles south of the anticlinal. It was begun on June 19th, 1897, and the rig burned down on July 22nd. This was rebuilt, and drilling began again in September, and continued till June 7th, 1898, to a depth of 3,525 feet. The hole was in sandstone and shale for the entire distance, the limestone not being reached. No oil was found, but salt water was struck at 1,100 feet, which is now flowing from the pipe. The elevation of this hole is 920 feet.

Well No. 29. Well No. 29 is situated in the second group of wells a short distance north of the York river at an elevation of 130 feet. It was commenced on November 27th, 1897; the drift was 61½ feet deep. It reached a depth of 2,600 feet in October. A little gas and oil was reported at 2,180 feet, and salt water at 840 feet, at 1,209 feet, at 1,380 feet and at 1,450 feet. The limestone was not reached and the hole was abandoned in shale and sandstone. At this well the central collecting tank for the area is located, and from this point the pipeline of eleven miles extends down to the refinery at the first group of wells, about seven miles west of Gaspé village. A pumping station was also erected, and in the tank there is at present a quantity of amber oil, estimated at from 200 to 250 barrels.

Well No. 30. Well No. 30, is located one and a quarter miles north-west of the last, near a small brook about one mile north of the York river, the elevation being 215 feet. It was begun on June 24th, 1898, and ended January 20th, 1899, at a depth of 1,580 feet. No oil or gas was found in this hole, which was sunk in sandstone for the entire distance, but salt water was very abundant and was struck at 860 feet, at 930 feet, at 1,022 feet, at 1,075 feet, at 1,150 feet, at 1,210 feet, at 1,450 feet and 1,480 feet, the water at last being too heavy to continue operations.

Well No. 31. Well No. 31 is one mile south of the last and on the bank of the York river at the mouth of the same small brook as the last. The elevation is 164 feet, and the boring was commenced on April 4th, 1898, and continued till April 30th 1899, to a depth of 2,815 feet. The contact with the limestone was found at 2,450 feet, and there was a small showing of oil at 1,700 feet. The well was reported as giving

about one barrel of oil per day for a short time, and the total output is given at about 23 barrels.

Well No. 32. Well No. 32 is the most easterly of this group. It is situated near the bank of the York river at an elevation of 200 feet. Boring began in January, 1899 and the hole was carried down in sandstone and shale to a depth of 1,825 feet to the limestone in which the boring continued to a total depth of 1925 feet. on June 13th. A little gas and oil was found at the contact, and it is reported to have yielded about ten gallons of oil per day for a time. In July, 1902, it pumped from 5 to 6 gallons. a day, but irregularly. The pumping log of this well gives a total yield to Aug. 9th, 1902, of 1,745 gallons.

Well No. 33. Well No. 33 is situated $2\frac{1}{2}$ miles further up the river than the last and on the bank of the stream. The elevation is 200 feet. Work began on May 8th, 1899, and ended on Aug. 26th, 1901. No oil was found in this hole and the limestone was not reached, the rock being sandstone and shale throughout. The well is now discharging salt water, which with gas was struck at several points, and the total depth reached was 2,607 feet.

Well No. 34. Well No. 34 is located near the centre of the second group of wells, at an elevation of 310 feet. It was commenced on June 25th, 1900, and ended Oct. 6th, at a depth of 1,677 feet. No limestone was reached. A small quantity of oil and salt water was struck at 1,600 ft. It pumped half a barrel a day for some time, the record of the pumping log giving a total yield to May 24th, 1902, of 1,744 gallons. Since that date to Aug. 9th, the output has been only salt water.

Well No. 35. Well No. 35 is about $1\frac{1}{4}$ miles north-west of the last. The elevation is 360 feet, and it was commenced in May, 1901, and continued to a depth of 1,810 feet, on the 17th August. Limestone was struck at 1,800 feet, but no show of oil was found. The limestone was so hard that the breaking of the tools prevented further work.

Well No. 36. Well No. 36 is the most northerly of the wells in group one near Gaspé Basin. It is situated near the crest of the Tar Point anticline at an elevation of 804 feet, and is probably about one-eighth of a mile north of the supposed axis. Work began on July 9th, 1901, and continued till Dec. 4th, to a depth of 1,950 feet. The probable contact of the limestone was reached between 1,780 and 1,825 feet, as some sandy layers were interstratified in this portion. No oil was found in the boring, but salt water was struck at 1,065 feet, and again at 1,225 feet. The limestone in the lower portion also appeared to have interstratified sandy layers.

Well No. 40. Well No. 40 is the most westerly hole bored. It is located on Fall brook, a branch of the York from the north, in the west part of block 38. Its elevation is 827 feet, and it is supposed to be a short distance south of the St. Peter anticline. The log of this well showed sandstones all the way to a depth of 2,305 feet.

Well No. 39 not bored. Well No. 39 is located on the line of the Tar Point anticline, north of the wells of group one, but though the rig is in place it has not yet been bored, since the results of the surrounding wells were so unsatisfactory as, in the opinion of the resident engineer, not to warrant the expense.

Wells of the Canada Petroleum Co. In addition to the wells of the Petroleum Oil Trust just described, a number of other wells was bored by the Canada Petroleum Co., in the area included in groups one and two. Of these the four located in group one have already been noticed in preceding pages. Of the second group seven were put down on the north side of the York river, including Nos. 1, 2, 4, 5, 6, 8 and 11, while a 12th well was located on the bank of the York at the mouth of a small brook on the north side about five miles further up the river. With the exception of the last these are all located on what is known as block 40.

Well, No. 1 and 2. Of these wells, No. 1 was started on July 6, 1899, and finished on Sept. 22nd, at a depth of 1,582 feet. The elevation was 270 feet. The boring was entirely in sandstone and the limestone was not reached. Oil and gas were struck at 1,550 feet, and the well was fitted for pumping and was pumped in 1901 from June 25th to Sept. 21st, in all 39 days, yielding in this time 949 gallons. In 1902 it was pumped from May 22nd to July 24th, in all 25 days, the yield being in all only 75 gallons, or an average of 3 galls. per day for the latter period. In August the well was flowing salt water only. The total recorded oil from this well was 1,024 galls.

Well No. 2 is situated about 100 yards south of the last. The elevation is 230 feet. It was commenced on August 5th, 1901, and finished on October 13th at a depth of 1,591 feet. Oil and gas were found in small quantities at 1,570 feet. The pumping log of this well gives an output of only three gallons.

Wells Nos. 4, 5 and 6. Well No. 4 was commenced on August 15th and finished on November 11th, 1901. The elevation was 276 feet, at a point one-quarter of a mile east of last. The depth of the boring is uncertain but from 2,100 to 2,200 feet, at which point the limestone was reported. No oil found but salt water was met with. The boring was in sandstone and shale all the way.

Well No. 5 is about 300 yards south-west of the last. The elevation is 200 feet. It reached a depth of 2,200 feet and shows of oil were found at 1,349 and at 2,140 feet. About three barrels are reported as taken out, probably by bailing, as no pumping log exists, and the well was abandoned. The last show of oil is apparently near the contact of the limestone with the sandstone.

Well No. 6 is about 150 yards west of No. 2. The elevation is 246 feet, and it reached a depth of 2,360 feet to the limestone. A very small trace of oil was reported at 2,340 feet, which was of no importance, and the well was abandoned, no oil being taken out.

Wells Nos. 8, 11 and 12.

Well No. 8 is on the bank of a small stream about 600 yards south-west of the last. It reached a depth of 2,394 feet, and the limestone was struck at 2,340 feet, where a small trace of oil was found. The well was shot without beneficial results and then abandoned. The elevation of the site is 210 feet. Salt water was struck in the upper part but cased off.

Well No. 11 was sunk on the bank of the York river on the line between blocks 40 and 41. The elevation is 150 feet and the depth reached was 1,924 feet, the limestone being struck at 1,900 feet. Found salt water with a little oil at 1,490 feet in the sandstone, but the oil was of no importance, and the well was abandoned.

Well No. 12 is situated on the bank of the York river at the mouth of a small brook on block 39. The depth reached is given as 1,500 feet without any trace of oil being found. A band of black shale was passed through at 280 feet. This location is about midway between the Point St. Peter and Mal bay anticlines.

International Cos. well.

In addition to the records of wells already given it may be said that the International Company bored a well in block 41, on a small brook which flows into the York river near the location of No. 6 of the Petroleum Oil Trust. The site was evidently chosen from the fact that several oil-springs occur in the vicinity, one of which is of quite large size. A line of fault crosses the area a short distance south-west of the location and a high ridge of sandstone rises to the north-east, while the limestone is brought up by the fault just to the south-west. The dip of the rocks is to the south-west at an angle of 16 degrees. The boring was carried to a depth of 1,700 feet in sandstone throughout, as would naturally be expected from the position of the rocks in the area, and no trace of oil was found. The limestone to the south is bituminous, and the oil-springs evidently proceed from the line of fault, there being three of these springs on this line in a distance of about half a mile along its course.

The pumping logs.

The study of the pumping logs shows certain features relating to the occurrence of oil in some of the wells which is of considerable importance. After the wells have been standing for some days or months there is manifestly an accumulation of oil in some of them which has gathered by slow percolation from the surrounding rocks, probably along fissures. Thus, when pumping operations were commenced in 1901 on some of these, the output for several days was fairly large, but in a short time it fell off to a few gallons or even quarts, and in some cases entirely ceased.

The first date of pumping appears to be March 9th, 1902. Thus in well No. 31, which is in the group on block 40, the first day's yield is given as 260 gallons, on March 15th the same amount, but on the 22nd the output was only 80 gallons, on the 27th only 40 gallons, on the 28th only 20 gallons, and on the 30th 18 gallons. On April 3rd, after an interval of three days, the outflow was 38 gallons, then daily for three days it pumped 15 gallons. After six days rest it amounted to 37½ gallons on April 19th. On May 6th, after sixteen days rest, the outflow was 87 gallons, or an average of only 5½ gallons per day. This yield gradually diminished, till on July 11th, when the pumping ceased, it was only two gallons, after an interval of 16 days rest. The total amount of oil by log from this well was 1,055 gallons, or a little over 20 barrels from 27 days pumping.

In some of the wells the pumping record shows a considerable irregularity. Thus in well No. 34, the yield on March 16th, the first date of pumping, was only 10 gallons. On the 23rd, after an interval of six days, it was 40 gallons. On May 1st. it was also 40 gallons. From this date it was pumped regularly till the following September, the yield varying from five gallons per day to 30 gallons, or a daily average for pumping days of about 10 gallons per day, or, for the whole period, of 5½ gallons. In 1902, for the three days in April from the 22nd to 24th, the yield was 247 gallons. Then water only for 14 days, and for seven days in May, from the 9th to 24th, it varied from a quarter gallon to one gallon, after which the yield was water only to August 9th, at the time of our visit. The total yield from this well per log was 1,744 gallons for the two seasons' pumping.

Logs of wells.

Well No. 32 began pumping on March 22nd, 1901, and was pumped until September 21st. of that year. In 1902, it was pumped from April 26th to August 9th, the day of our visit, in all 188 days. The total yield was 1,745 gallons, or an average of about 9½ gallons per day. In the latter year the yield varied greatly, ranging from one gallon per day upward, and for the last month averaged about four gallons per day.

Well No. 19 was pumped from May 22nd, 1901, to September 21st, and in 1902 from April 22nd to August 9th, in all 163 days. The total yield is given as 850 gallons, or an average per day of about four gallons. From May 1st, 1902, the yield was for the most part about one gallon daily, occasionally reaching three gallons.

Well No. 17 was pumped from April 24th, 1901, till August 22nd. The total yield was 126 gallons for 16 days' pumping during this time, or an average daily flow of about one gallon.

Well No. 15 was pumped, in 1901, from May 25th to August 5th, with a total yield of 231 gallons, or a daily average of about three gallons.

Well No. 11 was pumped for four days only. On May 25th, 1901, it gave four gallons, on June 4th, 50 gallons, on June 28th, 17 gallons, and on July 6th only four gallons, in all 72 gallons, or less than two gallons per day for the whole time.

Well No. 22 was pumped for three days only in 1901. On June 1st. it gave 600 gallons, on June 3rd, 200 gallons, and on July 26th, only 10 gallons.

Well No. 12 was also pumped for three days only. In 1901, June 26th, 30 gallons; July 3rd, it gave one gallon; on July 26th, 55 gallons; in all 86 gallons.

Well No. 16 gave on June 10th, 1901, 150 gallons. Nothing further recorded, output probably obtained by bailing.

Well No. 13 gave on June 12th, 40 gallons, and on July 6th, only one gallon.

Well No. 10, on June 5th, gave 125 gallons, on the 24th, eight gallons, and on the 27th, only one gallon.

Well No. 14 gave on June 25th 16 gallons, on June 26th only one gallon, and one gallon also on July 6th.

Well No. 27 was pumped, in 1901, from April 5th till August 15th. The yield for this period was 385 gallons, or an average of rather more than 2½ gallons per day. In 1902 it was pumped from June 18th till August 9th, with an output of 192 gallons, the daily yield steadily declining till August, it averaged about one gallon to one-half gallon per day. The total yield of this well was 577 gallons.

Well No. 20 was pumped from March 28th, 1901, till September 21st, with a yield of 1,042 gallons. In 1902 it was pumped from April 2nd till August 9th, with a yield of 708 gallons. In all a total of 1,750

gallons. The daily average in 1902 was about two to three gallons for the greater part of the time. An interesting point in connection with this was the yield for April 21st, which was only two gallons, while on the 22nd it is given as 280 gallons, but this on the 28th had fallen to seven gallons.

Total amount of oil pumped, 1901-1902.

The total amount of oil as per these pumping logs taken out in 1901 and 1902 amounts therefore to 9,384 gallons, or allowing 45 gallons to the barrel, about 208 barrels. In addition to this the Canada Petroleum Co. give an output of 1,227 gallons, or about 27 barrels.

This is exclusive of the different amounts claimed to have been lost by fire and otherwise during the period of borings, of which no reliable estimate can be obtained.

Occurrence of oil.

From a careful consideration of all the data at present to hand regarding this field as a producer of oil in economic quantities, it must be said that the outlook can scarcely be regarded as favourable. There are no well-defined oil-sands, such as are recognized in the true oil territory, and where oil has been obtained in reported large quantities it would seem to occur in isolated pockets only, since the continuation of the borings to a greater depth has given no favourable results. That oil in small quantities exists in different portions of the sandy strata, and occasionally also in the limestone is evident from the records, but so far it is plain that nothing which can be regarded as of economic value has been found.

Unfavourable conditions for oil.

There are practically no data obtainable by which wells may be located with even a fair prospect of finding oil in paying quantities. The anticlinal theory which is applicable to the western oil fields as being favourable to the occurrence of oil, is not supported by the results obtained in this area, and the presence of numerous faults, with steeply inclined strata, and the abundance of salt-water which is encountered in most of the borings already made, are all against its successful exploitation. At the present time the location of bore-holes is entirely a matter of chance; and though holes have been sunk to a depth of over 3,500 feet such deep borings have only been made at enormous expenditure, and in every case without any satisfactory results. The theory that the oil occurs at the contact between the sandstone and the limestone must also be abandoned. The supposition that the presence of oil-springs at different points is a favourable indication of large underlying deposits of oil has been clearly disproved, and since these usually occur along or near lines of fault must be considered as adverse to that hypothesis. The expenditure of such large sums of money as have been made during the last fourteen years, and the

Oil springs.

absolute lack of results in finding oil in paying quantity, may well be taken as conclusive that no satisfactory results will be obtained from such further expenditure in this direction.

The Albert Shale Deposits of Albert and Westmorland Counties, N.B.

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Former reports.

The following report on certain economic aspects of the Albert shale deposits of Albert and Westmorland counties, New Brunswick, may be regarded as, in most respects, supplementary to the general report on these rocks, published in 1876-77, in the annual volume of the Geological Survey by Dr. L. W. Bailey and the writer. At that time a somewhat exhaustive examination of these shales and of the associated rocks was carried out throughout their whole extent in the two counties mentioned, more particularly with reference to the presence of the valuable mineral albertite, which had for some years been largely and profitably mined at the 'Albert mines.'

In the course of that examination the presence of heavy beds of what is usually known as 'oil-shale,' now styled by some persons 'cannelite,' was observed: and while these heavy bands were not found to bear any close association with the deposits of albertite, their undoubted value as a possible source of supply for oil by distillation was clearly recognized.

Occurrence of Albertite.

The mode of occurrence of these heavy oil-shales is quite distinct from that of the albertite. In the case of the latter the mineral occurs in the form of true veins, which sometimes follow the lines of stratification of the inclosing shales, but which also often traverse them at well defined angles. This aspect of the question has so often been discussed by various writers that further enlargement on the subject is unnecessary, and the once stated opinion that the albertite occurred as a true bed, similar in this respect to bituminous coal, may now be altogether laid aside.

Character of oil-shales.

On the other hand the massive 'oil-shales' occur as true interstratified beds in the bituminous shale series.

As to the geological position of the shales as a whole it may be remarked that somewhat diverse opinions have been held from time to time by different observers. Thus in the early days of their investigation it was supposed that they represented an integral portion of the

Lower Carboniferous formation. This conclusion was reached from the presence in certain bands of the shale of remains of fossil fishes and plants which were then supposed to have a Lower Carboniferous aspect and to definitely fix their horizon. The investigations made in 1876 showed that however true this might be, the mass of the shales themselves occupied a position entirely unconformable to the true Lower Carboniferous sediments, associated with limestones and gypsum, and which are well defined throughout the area, and that with good reason they should therefore stratigraphically be assigned to a lower horizon or regarded as of Devonian age. It may be added that this view as to their position is now generally accepted by those most familiar with their study in the field.

Horizon of Albert shales.

Extent of the deposit.

As for the extent of the Albert shale formation it may be said that it has been traced for a distance of over thirty miles from east to west. The shales are not, however, continuously exposed throughout this whole distance, since they are sometimes covered over by overlying sediments, either of Lower Carboniferous or Millstone-grit age. In Albert county they occupy a position for a considerable portion of their area along the north flank of the range of hills known as the Caledonia mountains, the rocks of which consist of granites and other intrusives along with gneiss, schists of various kinds, hard slates, &c., which are regarded as of Pre-Cambrian age. The course of this range is north-east and south-west. East of the Albert mines the crystalline rocks are not seen, except in a small outcrop near Calhoun's mill on the Memramcook river, a few miles north of Memramcook village, on the Intercolonial railway. The shale deposits extend onward across the Petitcodiac and Memramcook rivers, showing in the banks of both streams and at different points over the intermediate area, as at Beliveau, Taylorville and along the roads between Dorchester and Memramcook.

Areas in Albert Co.

In the Albert county area the best exposures are seen at the Albert mines, four miles west of the Petitcodiac river. In the intermediate space they are, however, largely concealed by the overlying Lower Carboniferous formation which includes the gypsum deposits of the Hillsborough Plaster Co. Further west they are well seen at Baltimore, six to eight miles distant from the Albert mines, outcropping along the courses of the several branches of Turtle creek and in numerous outcrops on the hillsides. Though they have not been traced continuously between these two places owing to the fact that they are sometimes concealed by red and gray marls of the overlying formations, it is regarded as very probable that they form a continuous belt for the entire distance.

Albert mines and Baltimore.

West of the Baltimore areas the shale belt is continuous for a further distance of some four miles to the south branch of Prosser brook, where it terminates against a spur of the old mountain rocks. The shales, however, again reappear to the west from beneath the Lower Carboniferous sediments at Pleasant valley and again at Mapleton, the latter place about three and a half miles east of Elgin Corner, where they form a band about two miles in length. West of Elgin they are also exposed along a branch of Pollet river and form a narrow band along the course of the stream. This outcrop practically marks the western limit of the shales in Albert county. Elgin and Mapleton.

The exposed width of these shales is nowhere very great, and in Albert county seldom exceeds half a mile, but in Westmorland this breadth is in places somewhat greater. The rocks of the area are frequently much disturbed, being affected by numerous faults and often inclined at high angles. At the Albert mines and also at Beliveau and Taylorville, this feature is common, and several well-defined anticlinals are visible at these places. In the Baltimore area the shales are more regular, with a prevailing dip to the north at angles of 15 to 25 degrees. Faulted character.

In certain areas the shales are underlaid by a hard green conglomerate which is made up of the debris of the mountain rocks. This feature is well seen on Pecks' creek, west of the Albert mines, as well as at Beliveau, at Mapleton and at the locality west of Elgin Corner. Conglomerates.

The thickness of the shale formation has been estimated at about 1,000 feet or possibly something more, since owing to their folded and faulted character the exact determination of their volume is rendered very difficult. In their physical characters they vary somewhat in different localities. Some of the beds are comparatively sandy, constituting in places a bituminous sandstone, while other portions are quite thin and papery. Occasionally thin bands of a hard dolomitic-looking limestone form interstratified layers, but the bulk of these is small. As a rule the shales and sandy layers are bituminous throughout the formation, but certain portions have this feature much more largely developed than others. Thickness and character of shale.

Small veins of the black shining mineral albertite are quite abundant at several localities. As a rule these are too small to be mined profitably, and, with the exception of the large vein which was worked so successfully for many years at the old Albert mine, no deposits of this mineral have elsewhere as yet been found in paying quantity. A peculiar feature of this mineral is its occasional association with both Occurrence of albertite.

the underlying and overlying rocks. Thus at several points it is known to occur in the old rocks of Caledonia mountain as small threads. In this case it is probably due to infiltration from the overlying shales; while in the upper series of Lower Carboniferous limestones, gypsum, and conglomerates it is occasionally observed in small irregular veins or stringers, and even in the still higher sandstones of Millstone-grit age it is sometimes found in veins of considerable size, so much so that, at what is known as the East Albert mine, attempts have been made to mine the deposit of albertite. In such positions the mineral may be regarded as a distillate, newer than all the rocks in which it occurs.

The East Albert mine.

The old Albert mine.

At the old Albert mine the deposit which was evidently of the nature of a true fissure vein, was worked downward to a depth of nearly 1,400 feet from the surface. In the lower levels the vein matter frequently occurred as a cemented mass of shale and albertite, the substance being too impure for shipment, and large quantities of this material were thrown out in the dumps where it can be readily seen. In the case of the albertite itself also, owing to the great purity which was at that time required for shipment, quantities of the mineral were thrown aside with the waste. This albertite can also be everywhere observed in the mass of the dump and around its sides where it has been washed out, and many of these pieces are of good size and quite free from any impurity. On the whole it may be said that many tons of pure albertite have been thus thrown away.

Other veins untested.

It was supposed at the time mining operations were suspended at this mine that the mineral in paying quantities was practically exhausted. It does not by any means follow, however, that this was the actual state of the case. Several small veins have long been known to exist which have as yet been practically unopened, and their actual value as yet not fully ascertained, and one of these, situated on the north side of an anticlinal near the main road through the old village, shows at the surface an exposed breadth of at least two feet This vein, which appears to be a branch of the main vein which was worked for so many years, is certainly worthy of being tested to prove if it does not extend, and even increase in size at greater depths, a possibility which, from the irregular character of the main vein, is likely to occur.

The oil shale bands.

The 'oil-shale bands' to which this report is especially supposed to relate, occur in different parts of the shale body. They consist of thick seams of a dense, usually black and massive rock, radically differing from the ordinary bituminous shales, though they have usually

been regarded and described under that head. They form regular beds, extending over long distances, and are thus entirely unlike albertite in that the vein structure of that mineral is entirely absent.

Their oil contents.

These beds of 'oil-shale' range in thickness at the Albert mines from three to nearly or quite six feet, and at least five of these bands or beds have been recognized at this place. The rock is very compact, breaking with a roughly conchoidal fracture, with a veined or woody aspect on weathered surfaces, apparently entirely free from grit of any kind, since it can be readily cut with a knife without appreciably dulling the edge, is very rich in oil, and certain portions readily ignite in the flame of an ordinary match. By analysis these dense 'oil-shales' are reported to yield, in portions at least, and the rock appears to be quite uniform throughout the largest beds, from 60 to 65 gallons of oil per ton. Along the course of Frederick brook, which traverses the area to the north of the main line of old workings, these strata of 'oil-shales' show in successive bands, separated by other shales, often brown in colour and sometimes highly bituminous, though the percentage of oil in these has as yet not been fully determined. It is probable however that a large portion of these intermediate shales will yield not far from 30 gallons of oil per ton.

Thickness of bands.

These black 'oil-shales' are also well developed at Baltimore and at Taylorville. At the former locality, four or possibly five of the bands occur, varying from three to six feet in thickness; and as far back as 1864, works for the extraction of the oil by distillation were erected and the industry carried on for several years. The discovery of the oils of the west, however rendered crude oil so cheap that in face of a duty of ten cents per gallon on the output, the greater part of which went to the United States for refining, the industry was obliged to close down. The rich bands at Taylorville were also quarried to some extent for the same purpose.

Baltimore and Turtle creek.

The black bands are well exposed on all the branches of Turtle creek in the Baltimore area and they have been opened by several drifts on the hill-sides. The thickness of the several bands is thus well established in this district. On the west branch of Turtle creek, beyond the Stewart farm the colour of the oil-bands becomes grayer but the mass of the rock is filled with blackish streaks, and the percentage of oil from these beds, of which two are known to occur, is apparently greater than in the black bands, reaching by analysis as much as 80 to 85 gallons per ton. The thickness of these two gray 'oil-shales' on the west branch is stated by Mr. William Hall, formerly-manager of the Spring Hill coal-mines, to be 20 and 21 feet. They

have been opened to some extent and some tons extracted. The rock kindles readily on application of a lighted match to thin pieces.

Bands at Taylorville.

The number of 'oil-shale' bands at Taylorville was not ascertained, though there are several in the area. In character they are like the bands at the Albert mines, and the quarry from which they were mined is in a field near the road crossing from Upper Dorchester and about one mile from the Memramcook river.

The quantity of material in these rich shale bands is therefore practically unlimited, and has been estimated by several mining engineers who have examined the property at as much as 270,000,000 tons.

Extent of the Albert shale deposit.

How far these Albert shales extend to the northward beneath the Lower Carboniferous and Millstone-grit sediments is at present uncertain. It is not supposed, however, that they underlie the whole Carboniferous basin, since east of the Petitcodiac and Memramcook rivers the structure is apparently basin shaped. They may, however, be repeated at several intervals. The most northerly recognized outcrop yet seen is on the north side of Indian or Lutz mountain, where on the road leading to the McLaughlin road they are exposed for some distance and apparently extend down the slope of the hill overlooking the valley of the Cocagne river. The shales of this locality resemble very closely those of Albert county and are probably of the same horizon, though they are much less rich in bituminous matter where exposed.

Lutz mountain band.

From Dr. Oliphant's paper on the oil industry taken from the Annual Volume U.S. Geological Survey, Vol. XX., 1898-99, the following figures are extracted :—

Statistics.

Quantity and value of the oil-shale produced in Great Britain, mostly in Scotland.

1890	2,212,250 tons.	£608,369
1891	2,361,119 "	707,177
1892	2,089,937 "	522,484
1893	1,956,520 "	489,130
1894	1,986,385 "	496,506
1895	2,246,865 "	561,716
1896	2,419,525 "	604,881
1897	2,223,754 "	555,936

Remarks.

A ton of bituminous shale yields very nearly an American barrel of petroleum distillate, and its cost is very nearly that of a barrel of crude laid down in Scotland.

Geological Survey of Canada
ROBERT BELL, Sc.D. (Cantab), M.D., LL.D., F.R.S., ACTING DIRECTOR.
1903.

Drawn for photolithography by P. Prévereault.

To accompany Part A Vol XV, 1902
No. 801
Price 10¢

A hundred gallons of crude shale oil obtained by distillation of the bituminous rock yields about 30 gallons of fair illuminating oil, 16 gallons heavy oil, 14 gallons paraffine scale, 8 gallons lighter oils, and 5 gallons of petroleum spirits, while the residue is tar and coke, suitable for fuel only. Each ton of shale yields also about 50 lbs. of sulphate of ammonia. Analysis of crude shale oil.

Profits.

Broxburn Co., 1898, 6 per cent on preference stock and 8½ per cent on common. Profits of manufacturer in Scotland.

Oakbank showed a profit of $55,000 and a 5 per cent dividend declared.

Pumpherston, an apparent profit of $105,000, dividend 6 per cent.

Loss.

Young's Co., deficit of $40,000.

Holmes Co., shrinkage of $30,000.

Clippens Co., loss of $70,000. Towards end of 1898, all stocks showed great improvement.

Report on the Geology of Prince Edward Island with reference to proposed Borings for Coal.

Dr. R. W. Ells.

In the year 1883, several weeks were spent by the writer in a brief study of the geological formations found on Prince Edward Island and a short report thereon was given in the Geological Survey Report for the years 1882, 1883–84, more especially as relating to the western and southern portions of the island. Sufficient data were however at that time obtained to warrant the conclusion that the rocks found in the eastern portion were practically similar in age at least to those which were more carefully examined. Work of 1883.

In that report the opinion was expressed that the views put forth by Sir William Dawson in his report on the island in 1870, that the greater part of the red sandstones and shales of which the island rocks are largely composed, were of Triassic age, would need to be somewhat modified, and that, in so far as then examined, these rocks more properly belonged to the Upper Carboniferous series, or possibly to the Sir Wm. Dawson's report, 1870.

Permian. The term Permo-Carboniferous was therefore chosen as best meeting the nomenclature of the question.

Change of view.

The areas assigned by Sir William Dawson, in his report, to the Upper Carboniferous formation were confined to a strip on the western shore from West Point to North Cape, and to certain areas east of Charlottetown and near the entrance to Charlottetown harbour, of which, however, he did not consider the age as actually determined. The detailed examination of the island in 1883, however, showed that such a separation was not possible, but that so great was the similarity in the rock formations over the greater part of the island, the whole or at least the greater portion should be included under the same head.

Work of Francis Bain.

Subsequently Mr. Francis Bain, working independently, and largely in connection with the plant remains which are found at many points throughout the whole province, came to a similar conclusion as to the Upper Carboniferous age of the greater portion of the island rocks from the fossil evidence. These conclusions were presented in a paper read before the Royal Society of Canada in 1885 by Sir William Dawson and with his comments thereon were published in the *Canadian Record of Science*, Montreal, vol. I., for that year. A previous paper by Mr. Bain relative to some fossils which he had found there was also printed in the *Canadian Naturalist* for 1881, in which the Upper Carboniferous character of the plant remains was indicated. The Triassic rocks were at that time regarded as confined to a limited area in the vicinity of New London, on the north side of the island, and the evidence upon which this separation was based was the finding some years before of the fossil *Bathygnathus borealis* which was then regarded as of Triassic age. With the exception of this fossil from the New London area, it may be said that all the evidence points to the opinion that the red sandstones and shales of which the island is largely composed may all be assigned to the Carboniferous horizon, or, as some geologists prefer to call them, Permian.

Supposed Triassic area.

Importance of establishing age of rocks.

The establishing of the age of these rocks as Upper Carboniferous is important in view of the proposed explorations for coal by boring. Though there are nowhere visible on the island, any rock formations which can be assigned to the underlying series of the productive coal-measures, such as occur in the province of Nova Scotia, the fact that their age is Upper Carboniferous instead of the higher or Triassic formation, shows that the probable depth at which coal-measures may be reached, if indeed such rocks underlie the island anywhere, is much less than was originally supposed.

Comparison with New Brunswick and Nova Scotia rocks.

The key to the problem regarding the occurrence of underlying deposits of coal on the island itself, cannot be ascertained from the study of the rock formations there exposed. There is in the province no actual data on which to base the occurrence of the lower or productive measures. In order to arrive, if possible, at some definite conclusion on this subject, some time was spent in an examination of the formations along the adjacent shores of New Brunswick and Nova Scotia, where rocks similar to those which occur over a large part of Prince Edward island, also occur.

Cape Tormentine.

In New Brunswick a narrow margin of the red sandstones, conglomerates and associated shales of the upper series is found at several points along the shores of the Gulf of St. Lawrence, as far north as Shippegan island. They are also well seen in the Tormentine peninsula where they pass downward into underlying gray sandstones, which here are supposed to represent the lowest portion of the Upper Carboniferous in this direction.

Shediac and vicinity.

Near Shediac and along the east coast of New Brunswick, these newer rocks rest upon gray sandstones and conglomerates which have been regarded as of Millstone-grit age, and the productive coal-measures have not as yet been recognized in this part of the province. While the gray beds of the two somewhat widely separated divisions of the Carboniferous rocks present certain points of similarity, there are some features which render their separation possible. The sandstones of the upper series can be generally distinguished by being much softer and less coherent in character than the gray grits and conglomerates of the Millstone-grit series.

Baie Verte and Aulac.

South of Baie Verte, this difference in character can be readily seen on the road leading across to Aulac. Thus, at the latter place, what is known as the Aulac ridge rises near Aulac station on the Intercolonial railway, and extends in a north-east direction, in the direction of Pointe de Bute and Tidnish. The rocks of this ridge are gray grits and quartz-pebble conglomerates, and have a distinct anticlinal structure.

Upper conglomerate rests on Millstone-grit.

About seven miles south of Baie Verte the Millstone-grit outcrop terminates, but at Halls hill, which is about two miles further north, a series of gray sandstones comes these rocks in, and have been cut down along the roadway. These belong to the newer series, and are soon overlaid by the soft red beds which are so conspicuous along the shores about Baie Verte, and thence east to Tidnish and on to Pugwash in Nova Scotia. In these red beds are bands of conglomerates in which the pebbles are

largely made up of bright red shale, and thin bands of impure red limestone also occur at several points. The series as a whole is quite distinct from anything seen in the Millstone-grit formation, and precisely resembles the rocks seen along portions of the shore of Prince Edward island, from Cape Egmont to Wood islands, as well as at many other points in that province. In New Brunswick they are also well exposed at Cape Tormentine, and along the shores of that peninsula at many places, while at Bayfield corner, and around Port Elgin they are underlaid by the grayer members of the upper series, which also show on the road between Shediac and Pointe du Chêne.

The formation in northern Nova Scotia.

These soft red rocks with occasional gray sandstones also appear along the north side of Nova Scotia in the counties of Cumberland, Colchester and Pictou. Here for the most part they overlie directly, in so far as yet known, rocks of Lower Carboniferous age without the interposition of the Millstone-grit or productive coal-measures. This contact appears to be of the nature of an overlap since there is no indication of faults between them. It is probable, therefore, that in this northern portion the true coal measures have never been deposited along this side of Northumberland strait.

Pictou and Merigomish.

Further east the rocks of the newer series are exposed along the south side of Northumberland strait to a point several miles east of Merigomish island, or about twenty miles east of Pictou harbour. At this place they rest upon sediments of Silurian and Cambro-Silurian age with which are associated granites and other igneous rocks. East of this the red rocks of the upper series are not exposed, either along the shores of Nova Scotia proper or on the Island of Cape Breton. There would therefore appear to be a gap of considerable extent in the sequence of the geological formations in this part of the province.

Anticlinal structure in P. E. I.

The structure of the rocks in Prince Edward island indicates the presence of several lines of anticline which extend across Northumberland strait from New Brunswick and Nova Scotia, and traverse the island in a general north-east direction. In order to locate these as precisely as possible an examination was made of the whole shore line, since but little information regarding structure could be obtained from the few exposures seen on the surface of the island itself. In fact, owing to the presence of much false bedding, the occurrence of dips and strikes thus seen were of but little value. The coast sections, however, are fairly good, though there are occasional long stretches occupied by sands where rock outcrops cannot be observed. The general succession of beds along the greater part of the shores can, however, be fairly well ascertained.

Apparently the lowest rocks of the Island series are dark red sandstones with occasional beds of conglomerate in which the pebbles are of soft bright red shale, with irregular beds of impure limestone, generally reddish in colour, but at several points a gray limestone also occurs. Pebble conglomerates are also seen at several places, as at North cape, and on the shores of Mill river south of Alberton, the pebbles being of quartz with, occasionally, pieces of hard metamorphic rocks. On the ridge about ten miles north of Wood island, and on the road to Cardigan, a deposit of well rounded pebbles is seen which have evidently been derived from beds of these conglomerates in the vicinity, and traces of which can be recognized in place. Rock of lowest division.

In character most of these red rocks are very similar to the beds seen in the sections along the Wallace and Waugh rivers on the north side of the Cobequid mountains in Nova Scotia. They are sometimes interstratified with beds of grayish sandstone which are usually thin and irregular, the gray colour apparently due to the elimination of the red colouring matter through the agency of plant stems which frequently occur in these lowest beds. This character is well seen at St. Peter island, near the entrance to Charlottetown harbour as well as on Governor island near by. Further east similar gray irregular beds are exposed in parts of the section at Gallas point. Similar to rocks in Nova Scotia.

On the west coast the nearest approach to this feature was observed on the shore at Campbelltown, where, underlying the great series of red shales and sandstones which form the cliff between Big Mimenegash and Wolf cape, coarse reddish grits with grayish bands crop out at the base of the bluff. While these may not be quite so low in the series as some of the lowest beds of Gallas point, they apparently indicate the lowest members of the series in this direction. Campbelltown and Mimenegash.

These are overlaid by a considerable thickness, probably aggregating several thousands of feet, of soft red sandstones and shales, occasionally with bands of impure limestone, which are seen over the greater portion of the surface of the island. Much of the sandstone is a dark red or red-brown, and these pass up into red sandstones with shales which continue to the summit of the formation. Throughout this series there is no very great variety as regards the character of the rocks themselves, and all may be included in the same general group, The usual dips of the strata are to the north-west and south-east. They are usually at low angles, rarely exceeding ten degrees, and more often ranging from two to six degrees. Occasionally however this inclination is as much as fifteen to twenty degrees for short distances. These seem to indicate slight disturbances of a local nature. Character of strata.

Local fault.

Only two small breaks were noticed, of which one was on the south shore, about one mile west of Rice point, which is at the west entrance of Hillsborough bay where there is a downthrow of about thirty feet, and a slight displacement on the north side of Governor island of less than ten feet. Eruptive rocks were seen at only one place, on Hog island in Richmond bay, where a dyke of diabase cuts the soft red sandstones and has altered these for a short distance along the line of contact.

Six anticlines in Prince Edward island rocks.

The anticlines noticed in connection with the structure of the Island rocks are apparently six in number. Of these the most northerly comes across from the New Brunswick shore in the vicinity of Richibucto head, and is not seen on the island proper as its course extends along the north-west shore a short distance out from the coast line. This may be styled the Mimenegash anticline. The rocks along this part of the coast, where observed between West cape and North point, all have a well-defined south-east dip, the strike being approximately parallel to the line of the shore, with angles ranging from two to seven degrees. On the shore near Little Mimenegash creek, a bed of gray limestone occurs, visible only at low water, which has been locally quarried to some extent both for lime-burning and for building stone, the church at Tignish being built from stone taken from this locality. These gray limestones were not seen at any point on the surface of the island.

1st anticline Mimenegash.

2nd anticline Egmont bay.

The second anticline is regarded as crossing the strait from the vicinity of Shediac point, north of Shediac bay on the New Brunswick shore, to the inner point of Egmont bay near the mouth of Percival river. The shores for some distance on either side of this bay are low and sandy, but there are certain low dips on either side of the island in the line of its supposed direction which should indicate its position fairly well, and it should reach the north shore of the island near Cavendish inlet. This line of disturbance is styled the Egmont anticline, but it is not so well defined as several of the others. Its western prolongation in New Brunswick should connect it with the outcrop of the old rocks in Indian mountain north of Moncton. The dips along the shore at Brae head on the north side of Egmont bay are all to the north at angles of three to five degrees.

3rd anticline Summerside.

The third line of disturbance may be styled the Bedeque bay anticline. It apparently extends from a point on the north side of the Tormentine peninsula, a short distance east of Cape Bald, whence it should cross to the vicinity of Summerside and continue to the north side of the island near Cousins pond, about two miles west of Cape

Tryon. The opposing dips of this anticline, though generally low, are well defined and rarely exceed four to six degrees. On the north side of Bedeque bay the north-west dips are well seen at Fifteen point and at Cape Egmont, and the south-east dips are seen at Indian point, and at Graham and Sea-Cow heads, the inclination here ranging from two to four degrees.

4th anticline Cape Tryon.

The fourth anticline extends from the extremity of Cape Tormentine in continuation of the Aulac ridge. It apparently reaches the shore of the island between Cape Traverse and Tryon. The opposing dips are well seen on the shore near the Tormentine wharf. They are not well defined on the shore of the island, but, on the road north from Hunter river station to New Glasgow, the axis is well seen at a point about one mile north of the former place. It probably reaches the north shore in the low area about Rustico beach, but good exposures are rarely seen in this direction as much of the coast is occupied by clay and sands.

5th anticline Gallas Point.

The fifth line of disturbance is that known as the Gallas Point anticline. This is one of the best defined, along the whole shore of the island. The opposing dips are well seen on the west shore of the point approaching Pownal bay. On the north side of this anticline, the ledges seen on Governor and on St. Peter islands, show dips to the north-west, at angles of seven to ten degrees, and this dip is maintained to the vicinity of Charlottetown. On the west side of Hillsborough bay, the dips can be seen at Rice point and Holland cove, and on the east side at Keppoch and Battery point, as well as along the shores of Pownal bay. Opposite Charlottetown the strata apparently flatten out, and this place probably represents the centre of a syncline. The south-east dips of this anticline are seen at Prim point, and as far east as Pinette river, beyond which, eastward, the shores are generally low and sandy and exposures few, to the vicinity of Wood islands.

6th anticline Wood Island.

At this place the dips become reversed, and are again to the north-west and north. These continue as far east as Cape Bear, the inclination of the strata varying from ten to fifteen degrees. The axis of this anticline, which may be styled the Wood Island anticline, evidently lies a short distance seaward, and a syncline must occur between this and Pictou island, which lies ten miles south of High Bank, since on this island a well defined anticline occurs with a east and west direction.

In the eastern portion of the island, the several anticlines appear to flatten out to some extent, and cannot be so readily recognized. The shores are often composed of heavy deposits of clay, and sand and rock

exposures are not so continuous as farther to the west. The inclination of the strata where exposed, is generally somewhat less than those just recorded.

Syncline.

At Souris the dip of the strata is more northerly, the strike coinciding generally with the run of the shore, as far east as East point. The angle of dip varies from five to ten degrees. There is a syncline in this direction in which East point is situated, and the reverse southeast dip was not seen till we reached Campbell pond, where the beds have a low southerly dip of from two to four degrees. Good rock exposures are rarely seen on this part of the island, since the shores east from Rustico are usually low and frequently formed of sand dunes or of boulder clay.

Thickness of island rock.

The actual thickness of the formation, as seen on the island, is somewhat difficult to determine. According to the estimate of Mr. Francis Bain, who divided the rocks there seen, into three groups, there are in all about 3,000 feet which he arranges thus :—

Estimate by Mr. Francis Bain.

1. A lower series of gray, brown and red sandstones and shales, termed by Sir William Dawson, Permo-Carboniferous with a thickness of about 800 feet. These contain plant stems which have been determined to be of Carboniferous rather than of Triassic age.

2. A middle series, conformable to the last, or nearly so, consisting of red sandstones and shales, with calcareous sandstones, which occupies the greater part of the island, the thickness of which he estimates at 2,000 feet; and

3. Red sandstones and shales, not distinguishable from the last, seen at New London, and having an estimated thickness of 150 feet. These include the Cape Turner beds of the north shore.

Probable thickness at Charlottetown.

It is doubtful if this estimate of thickness covers all the sediments of the island, and it is highly probable that the total volume is considerably greater. Thus making due allowance for false-bedding, and the difficulty of securing correct dips, if we take the section north from the crown of the Gallas point anticline to the supposed centre of the basin at Charlottetown, and allow a dip of seven degrees only, the thickness will amount to not far from 6,500 feet, or with an average dip of only five degrees the total thickness will be not far from 4,500 feet. This last estimate is, however, probably too low.

Comparison with similar rocks in Nova Scotia.

In this connection information obtained from sections made of similar rocks along the French, John and Waugh rivers in that part of Nova Scotia between Northumberland strait and the Cobequid

mountains will be of value. Most of these sections were very carefully measured by Mr. Hugh Fletcher of the Geological Survey. The rocks in this area consist largely of red sandstones and shales with, occasionally, gray beds of sandstone, and probably carry the formation, as seen on Prince Edward island, to the bottom of the series. It may be said also that in these sections no trace of the productive coal-measures was found, the Upper Carboniferous resting upon the old mountain rocks. Work by Mr. Hugh Fletcher.

Thus, on the French river a thickness of 4,925 feet was found. In all this there was no trace of coal, further than occurred as the occasional carbonized bark of tree stems. Traces of copper were seen where the ore has been thrown down from solution through the agency of plant stems. French river section.

On Waugh river the thickness of the formation was found to be 5,045 feet of red marl and sandstones with occasional gray beds. These were underlaid by a series of red conglomerates which form the lowest portion of the formation and in some places reach a thickness of 1,500 feet. No coal was seen, but traces of copper and some small traces of albertite. Waugh river section.

On River John the section in similar rocks gave a thickness for the formation of 8,107 feet. No coal was seen, but the usual occurrence of copper with traces of albertite was observed. River John section.

A section measured along the shore from Cape John to Toney river in similar red marls and sandstones to those of the island gave a thickness of 4,622 feet. Occasional gray beds were found. Cape John to Toney river.

It is evident, therefore, that in any attempt to reach a formation below the Upper Carboniferous great care must be exercised as to location for boring operations. It may be assumed that any depth beyond 2,500 feet will be practically outside the limit of successful operations, even should coal be found unless in very large quantity. The proposed locations must therefore be selected along those lines on which the lowest rocks of the series are exposed. Conditions for proposed boring.

As the axes of the anticlines apparently dip somewhat towards the north and east, it would appear, in so far our examinations have extended, that the most suitable points for trial will be, on the north-west side at Campbelltown or Mimenegash, on the south-west of Summerside, and on the south and east at Gallas point and Wood islands. Location for bore-hole.

Coal in New Brunswick.

Yet with this knowledge of locations, the probability or possibility of success as regards finding coal in workable quantity by any boring operations must still be regarded as very doubtful. Thus along the western portion of the island the only seams likely to be encountered

Coal branch.

will be those known to occur in that part of New Brunswick adjacent. As has already been stated no defined horizon of the productive coal-measures has yet been found in that direction, the thin seams known to occur at Coal branch, of a thickness of twelve to eighteen inches, belonging to the Millstone-grit formation, to which horizon also must be assigned the still thinner seam which has been found on the lower part of the Cocagne river.

Tormentine peninsula.

Further east on the Cobourg road near the road from Sackville to Bristol, about ten miles south of the shore in Tormentine peninsula a small seam of four inches occurs in the Upper Carboniferous rocks, and a like seam of from two to four inches is seen near Dupuis Corner, a few miles west of Cape Bald. These are of no value from the economic standpoint.

Big Caribou island, N.S.

In Nova Scotia along the north shore in similar rocks, a small seam occurs at several places. Thus in the boring on Big Caribou island, west of Pictou, a seam of seven inches of coal was reported, and also near Toney river, some miles further west. On the shore opposite Pictou, at Abercrombie point, a seam of fifteen inches occurs, and this outcrops at several points in the area between the East and Middle

Pictou and Merigonish.

rivers near their entrance into Pictou harbour. A band of oil-shale also is found associated with the coal. Further east, on the north-west end of Merigomish island a seam eighteen inches thick shows on the beach. These seams east of Pictou apparently occur low down in the Upper Carboniferous formation.

Port Hood and Mabou.

As regards the extension westward of the seams which are found on the west side of Cape Breton Island at Port Hood, and in the Mabou district, it would appear that these are cut off seaward a short distance from the shore, since Lower Carboniferous sediments are seen on the islands off the former place, and the productive measures are probably affected by faults which would render their continuation to the island very doubtful.

Possibility of finding coal by boring.

The occurrence of many faults in the Pictou coal basin and the fact that, east of New Glasgow, the Upper Carboniferous rests directly upon the Millstone-grit where the former is developed, renders it extremely improbable that the thick seams of the Pictou basin extend beneath the rocks of Prince Edward island, so that any borings on

the south side of the island would penetrate only the thin seams of the upper formation already described as occurring along the north shore of Nova Scotia. There is a possibility of some one of these being struck in the borings at Wood islands or Gallas point, provided such seams as seen in Nova Scotia are continuous to any distance. The probability however is that such seams have merely a local development.

Prospect unfavourabfe.

While therefore the outlook for finding coal in large quantity by boring, either in the Upper Carboniferous formation of Prince Edward Island, or in any formation underlying, is not very encouraging, it may be stated that the points suggested at which such trials should be made, will, if the borings are properly conducted, furnish much valuable information as to the actual sequence of formations, and there is always the possibility that other conditions than are warranted by the surface indications may be disclosed. Such possibilities can only be ascertained by a judicious expenditure of money, but in such expenditure, unless a proper supervision of the borings from day to day is maintained, and the log is properly kept, much of the beneficial results will be entirely lost.

The Carboniferous Rocks of Chignecto Bay.

Professor H. S. Poole.

Work by Mr. H. S. Poole.

I beg to report that in accordance with instructions received from the Acting Director of the Geological Survey, I examined in more detail than was possible last year, the several series of exposures about the head of the Bay of Fundy that supply connecting links between the wide expanse of Carboniferous gray beds which extend in an unbroken series from the Baie des Chaleurs to Sackville in New Brunswick and the measures of Nova Scotia, typified by the Joggins section in which thick workable beds of bituminous coal occur. The former series, in so far as yet known, do not contain similar deposits of corresponding value.

I had also an opportunity of discussing on the spot some of the important structural features with both Mr. H. Fletcher and Dr. R. W. Ells of the Survey staff. Mr. Fletcher is thoroughly conversant with the range of the Carboniferous over all of Nova Scotia, but hitherto was unfamiliar with the rocks of New Brunswick; and Dr. Ells had been engaged in the study of these rocks in the last named province in 1881–84.

Spicers cove rocks.

On July 21, with Mr. Fletcher I went to Sand River, N.S., and thence to Spicer's cove on the Bay shore, a region where Sir J. W. Dawson had assumed that Millstone-grit beds were brought to the surface by faulting parallel to the Cobequid range. This assumption, it is said, was not based on personal observation, but on inspection of transmitted hand specimens, and the late survey has failed to confirm it.

The Sand river fault.

Repeated visits have been paid by Mr. Fletcher to both the Millstone-grit series of the Joggins section and to these beds for the sake of comparing them in groups, but without recognition of similarity. Some faulting does occur at Sand river in the cliffs, but it is not detected on the brooks inland and the disturbances have every appearance of being very local and of but slight geological importance. There is also no such change in the character of the deposit as a fault of the required magnitude would be expected to exhibit. In fact there is less change noticeable there than at other portions of the shore where there are no disturbances of any kind. For instance at Birch cove, a buttress, of the sandstones, stands out from the general line of the cliffs and being of a different colour, appears, when viewed at a distance, as a piece of faulted ground. The change from the general gray colour of the series to a reddish hue between vertical lines is absolutely without any faulting or break in the bedding planes.

Reasonable conclusion.

No other conclusion than that reached by Mr. Fletcher seems reasonable after his very careful survey and repeated stratigraphical comparisons of the several theoretical divisions of this unrivalled section of the Carboniferous rocks; and that not only does the whole distance from Mill creek to Shulee represent an unbroken ascending series but that thence onward the upper beds are continued without serious faulting to Spicer cove, where the formation ends in a heavy bed of red conglomerate resting on the volcanic rocks of the Cobequid ranges.

No unconformity.

It is interesting to find that here no unconformity has been detected although a distinct separation in the Carboniferous sequence does occur elsewhere, as at New Glasgow,* and as at Hard Ledge, Maringouin, where an overlap is clearly exposed. There the nearly horizontal upper strata are seen to rest on moderately inclined Millstone-grit rocks, and at the contact fragments of the latter are included in the former. This exposure is at a place where a drift was at one time driven in on a bed of black fire-clay for coal, and it is near a well-

* Annual Report, Geol. Surv., Can., 1890-91, Vol. v, (N.S.) pp. 109 P., Trans. N.S. Instit. Sc., 1893, pp. 272-3.

marked syncline in the Millstone-grit that has its axis dipping 15° towards the west and in the direction of Shepody bay.

Extensive outlier.

For a further comparison of strata on the New Brunswick shore the bay was crossed to Alma, and the cliff section towards Owls head and the great fault there so prominent were examined. These gray rocks there offer an end view of the strip of Millstone-grit that rests on the flanks of the Pre-Cambrian coastal range and continues from Alma to Shepody mountain, forming without doubt an extensive outlier of the lower members of the Millstone-grit rocks exposed in more continuous series on Maringouin, and thus belonging to a horizon much below that of the workable coal seams of the Joggins.

With Mr. Fletcher, Dorchester cape was visited. Here occurs a transition from an extensive series of arenaceous shales and sandstones, of a reddish colour, into an equally well exposed series of the lower members of those gray of colour, which are assumed to be the base of the Millstone-grit. Here they include some beds of dark fire-clay and shale, with a few inches of coal, upon which openings have been made. No encouragement was, or could be given to the prospectors there at work, that further labour might lead to a material improvement in the thickness of the coal. A similar opinion had to be expressed in answer to inquiries respecting the thick shale beds carrying a few inches of coal at Slack cove, on the point of Maringouin. Here, large scales of fish were found in the under clay of the coal.

Repetitions.

In this search for conditions similar to those associated with the Cumberland coal-field, it was noted that there were repetitions, though on a much reduced scale, of the basin north-eastward alongside the prolongation of the coastal range, at the head of the Bay of Fundy; the first and smaller, lying between the pink rocks of Maringouin and Dorchester cape, and the other and larger, to the east of Westcock, where the base of the gray series is upheaved. In this basin, the greatest body of Carboniferous measures is in the neighbourhood of Sackville, and here, under the 'Permian' overlap, the highest beds of the series to be found in New Brunswick, are probably to be located. There is, however, no reason to expect that the highest will reach the horizon of the Joggins seams.

Unconformities.

In company with Dr. Ells, the contact of the gray series with the overlying 'Permian,' was sought for, and what was considered an unconformity, could be made out at several points. One of these is seen near the Westcock watering tank, on the Intercolonial railway. It also appeared that the line of contact assumed on the map of 1885,

might be somewhat modified, and the 'Permian' made to include the gray sandstone area about Gaspereau river, and thence, on, to Cape Tormentine, and also to run further inland, so as to include strata to the head of Shediac bay. In the other direction, south of Baie Verte, it should include the gray rocks of Halls hill towards Jolicœur, but the ridge from Mount Whatley to Aulac, should, as shown, remain Millstone-grit.

At Coal branch, near Harcourt, referred to in 1901, by Prof. Bailey, a considerable sum was expended in sinking a shaft of large size, to find a seam of coal, said to be six feet thick, and to have been struck in a bore-hole. The shaft cut only the 16-inch coal, mined in the adjoining river bank.

Search for petroleum.

The New Brunswick Petroleum Company have continued a vigorous search for oil, near St. Joseph's college and across to the Petitcodiac river, and the mouth of Weldons creek; some 14 holes have been bored, and oil got in several of them. Some of these holes have been put down to depths of over 1,000 feet. All are in the Albert shales, though in some cases, they were started in the gray sandstone, which in places caps the older strata. Several of the holes are coupled in series, and fitted with pumps and tanks. In the fall, three rigs were in operation at the same time, in the strip of Albert shales intruding between the Peticodiac and Memramcook rivers.

Albertite.

At the Albert mine, Mr. Robinson exposed, east of a fault, a branch of the original Albert vein, as much as two feet in thickness, and of sufficient importance to warrant further exploration, as the 'coal' will bring at least $14 a ton for varnish making.

Late in the fall another bore-hole, No. 8, was put down by Mr. John White, at a distance of 500 feet from No. 5, and at a depth of 177 feet some 20 inches of coal was found. In this hole a double core barrel was used, and the section obtained was as follows:

Section.

Journal of No. 8 Bore-hole at Dunsinane.

1902.		Ft.	In.
Oct. 23,	blue clay	10	0
"	red marl	7	0
"	" and sandstone	19	0
"	sandstone, mixed, light and red (mottled?)	5	0
"	" " with red marl	15	0
"	blue hard rock	4	0
"	red marl	3	0
Oct. 31,	" with sandstone	19	0
Nov. 1,	bluish fine hard	3	0
"	blue shale	3	0

1602.			Ft.	In.
Nov. 1,	red marl and sandstone		22	0
"	red and blue sandstone, with a little gray shale		8	0
"	red and blue hard marl		10	0
"	blue, fine hard rock		6	0
"	red and blue mixed marl		5	0
"	blue, fine stone		9	0
"	red marl		7	0
"	red and blue sandstone		8	0
Nov. 17,	dark blue shale		1	0
"	blue shale		9	6
Nov. 19,	coal	1 8		
"	shale	0 8		
"	coal	0 4		
"	shale	0 10		
"	hard rock	0 8		
"	shale	0 5		
"	fire-clay	0 3		
"	coal	0 4		
			5	2
"	hard pavement		2	0
"	blue shale		14	0
"	sandstone		15	0
"	blue shale		2	0
"	sandstone and conglomerate		53	0
"	shale		3	0
"	sandstone and conglomerate		77	0
			344	8

On comparing this journal with that kept, in other terms, of bore-hole No. 1 a similarity is noticeable and there seems to be a strong probability that they relate to the same strata down to the coal bed. Similarity of sections.

For the sake of comparison, the section of coal and associated strata struck in No. 5 bore-hole may here be given. This hole was bored without a double core barrel, and at 135 feet gave the following record in descending order:—

Coal	20 inches.
Light coloured soft shale	18 "
Coal	6 "
Soft shale	9 "
Dark shale	3 "
Black shale	6 "
Gray shale	6 "
Sandstone	18 "

The seam met with in these bore-holes is not regarded locally as the same coal as that opened at White's mine on the brook side, although the record of the borings seems to correlate fairly well with that kept of the deep No. 1 hole.

The map of 1885 shows the Intercolonial railway, at Calhoun's mills on the Memramcook river, as cutting through a granite boss about a Granite bosses.

mile in length. This is overlaid on its northern and eastern sides by sandstone beds of an horizon somewhat above that of the gray conglomerate which is so prominent a feature at Dorchester, the copper mine and the Bay shore. Another similar boss, but smaller in size, was this year observed on the brook near the head of McManus's milldam, four miles to the south-east of the larger exposure. Resting also on it on the eastern side were similar gray sandstones without intervening conglomerates or members of the red series. Against it on the south are highly inclined beds which at one time were included among the Lower Carboniferous. At the granite boss by the brook side was a small mound of highly altered very coarse conglomerate of uncertain age, and a larger exposure of the same rock occurs a mile further towards East Memramcook, here protruding through the superficial till. This larger mound, or its concealed extension evidently supplied the numerous boulders with which the neighbourhood is strewn.

Geological Observations in Northern New Brunswick.

Professor L. W. Bailey.

Tobique and Nipisiguit rivers.

Dr. Bell's instructions to me were to the effect that an examination should be made during the months of August and September, of the region about the headwaters of the Tobique and Nipisiguit rivers, the object of such exploration being threefold, viz., first, to add to our knowledge of the topography of a tract as yet only imperfectly known or mapped, secondly, to obtain any additional information available bearing upon the geological age and structure of the same region; and lastly, to make a special examination of certain tracts included therein with reference to their supposed auriferous character.

All necessary arrangements having been made for a two months' stay in the field, the latter was entered upon by way of the Tobique river, early in August, the party consisting of myself, Mr. R. A. A. Johnston, of the Geological Survey staff, whose assistance in many directions I would here gratefully acknowledge, and two guides familiar with the country.

Routes followed.

Owing to the state of the water, as well as for other reasons, it was thought best to at once ascend by canoes to Nictor lake, at the head of the Little Tobique river, and, after a portage to the Nipisiguit, to descend that stream at least as far as the mouth of Silver brook, the latter having been referred to as traversing a part of the district in which the finding of gold had been reported. Upon reaching this stream, after only a cursory examination of the country traversed *en*

route, an attempt was made to ascend it with a view to panning operations on the materials of its bed, but these, consisting almost solely of large blocks of felsite and granite, with little or no fine sediment, proved so unpromising, while the difficulties of the ascent, owing to the density of the vegetation bordering and in part covering the small stream, were so great, that all hope of effective work of this character was soon abandoned. A similar attempt was also made upon the Little South Branch, which joins the Nipisiguit about one mile and a quarter below the mouth of Silver brook, but with the same result. The immediate vicinity of the Nipisiguit, having been thus found to be altogether unfavourable to prospecting operations, our attention was at once turned to the other two objects of our journey, it being our intention, later in the season, to reach the sources of the stream mentioned above by the way of the other or Serpentine branch of the Tobique, it having been understood that in the latter direction, the conditions for the search of gold were more favourable.

Professor Ganong's work.

In entering upon the study of the topography and geology of the Nipisiguit country, as well as on that of the Tobique, we found ourselves greatly assisted by the work previously done, especially in the former direction, by Prof. W. F. Ganong during the last few years. The results of this work are embodied in a series of articles contributed to and published by the New Brunswick Natural History Society, and include, besides the first instrumental survey of Nictor lake, the fixing of the position of the more prominent hills and hill ranges along the entire length of the Nipisiguit, the determination of the altitude of many of them, and the assignment to them, according to a definite system, of distinctive names, by which, it is hoped, they may in future be known.

Heights of hills.

Not thinking it desirable to lose time by attempting to duplicate what had already been well done, our attention so far as topography was concerned, was mainly directed to the actual measurement of some of the hills of which the altitude had been only estimated by Prof. Ganong. Among these may be mentioned, in particular, the eminences designated as Mount Charnisay, Mount Wightman and Mount Walker, the last two having, respectively, the elevation of 630 feet, and 900 feet above the river, at their base.*

In connection with the topographical observations, some interesting geological facts were at the same time noted.

* These results have not been corrected for air temperature, and are only approximate. If 900 feet be added as representing the probable level of the river at this point (Ganong gives 875 feet for the mouth of Portage brook), these numbers become respectively 1,530 feet, and 1,800 feet above sea level.

Previous work in this region.

Without entering here into a detailed review of work previously undertaken in this region, it may be observed that in the Report of Progress for 1879–80, the tract of land traversed by the Upper Nipisiguit, together with a very large area lying on either side of that stream, was described as being probably of Pre-Cambrian age, and was so represented in the map-sheet issued some years later (1887) as illustrative of the geology of the northern highlands of New Brunswick. In each case the rocks were described as consisting mainly of crystalline felsites, sometimes becoming syenitic by admixture of hornblende, and in places associated with gneisses, felspathic and other schists, supposed to be of equivalent age with resembling rocks in the southern counties of the province. The view referred to was generally accepted, and seemed to be confirmed by the observations of later explorers, including Dr. R. Chalmers, Mr. W. McInnes and Prof. Ganong, neither one of whom seems to have observed anything inconsistent therewith. It was also shared by the writer, who, as early as 1864, made a traverse of the Tobique and Nipisiguit rivers, and described their more obvious features, though without attempting to assign to any particular age, the felsites which are such a predominant feature in the hills about the sources of these streams. Yet the facts observed by us during the past summer, not only upon the occurrences noted above but at many other points, are such as to suggest the possibility of a somewhat different view being entertained as relates to portions at least of the area under review.

New interpretation suggested.

The first facts bearing upon this possible new interpretation, were observed upon the summit of Mount Wightman, situated nearly opposite the mouth of the Little South Branch, and seventy-one miles above the town of Bathurst, where the felsites, instead of possessing the uniform and highly crystalline character usually associated with Pre-Cambrian terranes, were found rather to present the character of rhyolites and feldspar porphyries, associated with conglomerate felsites and breccias, which closely recall some members of the felsitic series which in the Geological Survey report for 1870–71, were included in the Silurian system, as found around the shores of Passamaquoddy bay, especially above the towns of Eastport and St. Andrews. Like the latter they are also often markedly epidotic and in places coarsely amygdaloidal, containing, in addition to blotches of chlorite and calcite, blebs resembling pebbles of white quartz, in the form of miniature geodes lined with minute quartz crystals. It is true that similar features distinguish many areas of so-called Huronian rocks in the southern counties, but they are there associated with chloritic, hornblendic and hydro-mica schists and slate conglomerates, usually highly

coloured, none of which have been observed by us in the hills of the Upper Nipisiguit. Another interesting feature, is the fact that upon Mount Wightman the possibly sedimentary nature of the felsite beds is indicated by the occurrence of strongly defined colour bands (usually reddish in a gray rock) and in such a position as to show that the strata are not far from horizontal. This being the case, it is not to be wondered at that these felsites should spread widely, that they should be essentially alike over large areas, and that in connection with the debris with which all the hillsides are deeply strewn, they should hide from view any beds of a different character upon which they may rest. Thus all the high hills lying between Nipisiguit lake and the Portage stream, a distance of fourteen miles, would seem to be thus constituted, and it is certainly the case with Mounts Charnisay, La Tour, Wightman and Walker, except that the latter is in part composed also of bright red syenite, which is probably intrusive. So the eastern end of the Green range and the so-called Feldspar mountains show associations of reddish and gray feldspar-porphyry with imperfect syenites. But that a rock of a different character does underlie a part, if not the whole of the felsitic area, is possibly indicated by facts observed in the ascent of Bathurst mountain on the Peak of Teneriffe, an eminence lying between the two ranges last mentioned and which from its prominence is familiar to all travellers upon the Nipisiguit.

Strata nearly horizontal.

Bathurst mountain.

The hill last named which attains, according to the observations of Prof. Ganong, an elevation of 2,108 feet above sea-level, is remarkable for its concealed form, the steepness of its ascent, and the small area which crowns its summit. It has always been supposed to consist, with the hills around it, of felsite only, and one might readily make its ascent and reach no other conclusion. Yet at certain points upon its slopes are to be seen exposures which show that this view is open to question. These exposures are to be found in ravines along the eastern side of the eminence at an elevation equal to about one-third of the entire height of the hill, and instead of felsite consist of heavy beds of coarse conglomerate and sandstone, dipping north-westerly at an angle of 40°. It was thought at first that there might be remnants of a newer and unconformable formation lying protected in a basin of older rock, but closer examination showed that not only are they covered by felsitic beds but that they clearly alternate with the latter. Thus we have here further indications that the rocks of the region are apparently bedded, that they lie at comparatively low angles, and that in addition to volcanic and semi-volcanic materials they include others of distinctly aqueous clastic origin. Moreover, these latter are wholly unlike any Pre-Cambrian rocks to be seen else-

Possibly not all felsite.

where in New Brunswick, and in many respects they closely resemble some of the sedimentary beds forming characteristic members of the Silurian system. In particular, the conglomerates, which like the sandstones are of a gray colour, more or less blackened with manganic oxide, while consisting largely of pebbles of white quartz, have associated with these, fragments of black silicious slate or petrosilex, just as do the conglomerates which occur near the base of the Silurian system in the valley of the Beccaguimec river in Carleton county or along the Aroostook river in the State of Maine. The sandstones also find their counterpart in closely resembling beds in each of these localities as they do upon the Seigas river in Victoria county, in these latter cases carrying typical Silurian fossils. We were not fortunate enough, in the limited time at our disposal, to find organic remains in the sandstones of Mt. Teneriffe, and in their absence it would be premature to predicate anything too positively as to their age but unless our observations, which were necessarily limited, are incorrect, they suggest, as already stated, for the structure of the region a different view from that previously entertained, and must be considered as an important factor in any further exploration of the region.

Conglomerates.

No fossils found.

A key to the supposed structure having been obtained as applicable to the upper Nipisiguit country, the idea was at once suggested that a similar structure might prevail elsewhere, and especially about the sources of the Tobique river. To test this point, an examination was first made of Bald or Sagamook mountain, almost the highest eminence in New Brunswick, which overlooks Nictor lake at the head of the Little Tobique. Here again felsite rocks, as first described by the writer in 1864, constitute the conspicuous parts of the mountain, especially near its summit, and until recently were believed to constitute its entire mass, except that, as observed by Dr. Ells and recently by myself, there are, at the base of the hill, towards its eastern end, ledges of greenish-gray chloritic and felspathic schists and slate conglomerates. These have been described as being nearly vertical and as dipping away from the felsites of the mountain: but though it is by no means easy to determine their true attitude, I am disposed to think that they are lying at a low rather than a high angle, and that the latter appearance is really due to their strongly pronounced cleavage, This view derives some confirmation from the fact that at the eastern end of the mountain, overlooking the Nipisiguit portage, the lower half of the eminence was found by Mr. Johnston to consist of slates and the upper portion of felsites, the latter showing distinct bedding at a low angle, and again by what is seen upon the opposite shore. Here, as well as upon Visitor island, the same slaty

Probably lie at a low angle.

rocks, which are largely slate conglomerates, are again well exposed, and give the same appearance of highly tilted strata, but in ascending Mt. Gordon, at the base of which they lie, repeated alternations of greenish chloritic schists, schistose grits and slate conglomerates occur in attitudes which indicate but little inclination. Finally, towards the western end of Nictor lake, near Armstrong brook, the shores previously represented as of Silurian slates, show ledges of felsitic rock, varying from gray to reddish in colour, and with a distinct dip of only 5°. Thus the sedimentary nature of the beds around the lake, the intimate association of felsitic or rhyolitic aqueous deposits, and the generally low inclination of the strata, accord with the observations made upon the Nipisiguit, and go far to indicate that like relations exist in the intermediate district and far beyond the latter.

Felsite at Nector lake.

It had been my intention, while at Nictor lake, to examine in detail all the hills in its neighbourhood, including Mounts Bailey, Franquelin and Bernardine, as well as the somewhat more remote eminences, such as Mounts Head and Carleton (the latter the highest mountain in New Brunswick), but a very serious accident having happened to one of our guides, making it necessary to seek surgical aid, this undertaking had, for the time, to be abandoned. Subsequently, all efforts to obtain another competent guide in the place of the one disabled having proved fruitless, all further work for the season was abandoned, by Dr. Bell's direction.

Accident to guide.

Owing to the circumstances alluded to, no examinations were made of the Right Hand branch and its tributaries, nor of the area between these and the Nipisiguit, drained by Silver brook and the Little South branch of the river last named. I am, therefore, unable to add anything upon the subject of the auriferous character of this district to what has been said by Dr. Chalmers and by myself in previous reports, except to state that so far as regards the region actually examined by us, including the felsitic hills and their associated rocks, no facts were observed which would favour the idea that these contain gold, or indeed any metal in workable quantities. Quartz veins are of rare occurrence, and such as were observed seemed to be quite destitute of mineral contents. The beds of the streams examined also, consisting almost solely of large blocks of felsite or syenite, offered but little encouragement to the prospector. It may be added that in all these respects the region of Nictor lake and the sources of the Nipisiguit is somewhat strongly contrasted with that of the Serpentine, where the rocks are mainly schists or slates, and abound in quartz veins. The extension of these latter beds would probably cross the upper part of Silver brook on the Nipisiguit and, therefore, include the area whose

Occurrence of gold not probable.

supposed auriferous character was an important factor in determining the investigations detailed in this report. But this and many other important questions relating to the northern highlands must await, as they should certainly receive, further careful study.

Growth of forest.

In addition to the above summary I have only to say that, in accordance with Dr. Bell's instructions the obtaining of data bearing upon the rate of the growth of trees in areas previously deforested was kept constantly in mind, but little could be learned, mainly for the reason that over the larger part of the region visited by us the forests are still in virgin condition. In the settlement of St. Almo, however, upon the Tobique, which was fire-swept about thirty years ago, and where the growth destroyed consisted of white birch, spruce and poplar, with many pines, the trees are now mostly white birch, attaining a size of four to ten inches in the butt, with spruce from twelve to thirteen inches, but with little or no pine. In some instances * a period of twenty-eight years has brought a tract covered only with a low scrubby growth of spruce to a condition capable of being cut to advantage. Some tracts, on the other hand, seem incapable of restoration, or only of a very slow one, the growth apparently as a result of the nature of the soil or the abundance of boulders being at all times low and scrubby.

Surveys and Explorations in Richmond, Cape Breton, Kings, Cumberland and other Counties of Nova Scotia.

Mr. Hugh Fletcher.

Winter office-work.

Mr. Fletcher spent the winter of 1901-02 in the ordinary routine work of the office, including correspondence and the compilation of plans and sections from surveys made in the field by himself and his assistants, during the previous summer, as detailed in the Summary Report for 1901 pages 208 to 214.

He left Ottawa on April 15 for Cape Breton to examine borings made at Coal brook in the Richmond coal-field near the line of the new railway from the Strait of Canso to St. Peters and Louisburg. He returned on May 1, but left again for Nova Scotia on June 16, with Mr. A. T. McKinnon, and did not return until January 2, 1903.

Field work of a general character.

Owing to the activity in various mining districts of the province and the demand for geological information of use in certain explora-

* The tract specially referred to is that of the head of the Mamozekel, one of the tributaries of Tobique river.

tions and mining operations, much of Mr. Fletcher's time was spent, by Dr. Bell's instructions, in Cape Breton and elsewhere outside the field of his systematic work.

The borings at Coal brook were made by one of the provincial government calyx drills, in charge of Major James L. Phinney, of Wilmot, Nova Scotia.

Boring for coal in Richmond coal-field.

It is stated on page 118 of Part P. of the Report for 1879-80, on the authority of Mr. A. McBean, that two seams of coal occur at Coal brook. Extensive explorations made since that date seem, however, to prove rather that the coal seam opened and worked near the mouth of the brook is the same as that found higher up and that it lies in a narrow basin, parallel to the general course of the brook, along which black shales are well exposed. From the workings near the mouth, from which eighty tons of coal are said to have been shipped, the seam was traced 700 feet, opened again about 1,600 feet further up stream, and followed thence nearly 1,000 feet further. The first drill-hole, about half a mile from the shore and on the top of the bank, is on the north side of the narrow basin, the second was bored at the axis of this basin, where the beds lie nearly horizontal, about 800 feet downstream on the left bank. The first was bored to a depth of 520 feet through blackish and gray argillaceous and arenaceous shales, with several thin coaly layers, light gray or whitish micaceous, pyritous sandstone, often striped, usually fine but with coarse beds. Only one thin red band was cut, about six feet in thickness. The dip of the rocks was 20° near the top while deeper in the hole it steepened to 49°.

Bore-holes.

Thickness of coal.

The second hole, drilled to a depth of 1,020 feet, must have proved the strata for a considerable distance toward Doyle creek. As stated above, only one workable seam of coal was found in these holes. Its thickness is variable. The maximum where uncovered in the brook was three feet two inches, with a two inch parting about six inches from the top, the upper part of the coal being impure. Where cut in the second bore-hole at 170 feet, the coal was one foot eight inches thick, corresponding with the seam as opened in a long trench to obtain fuel for the engine and in a level, 168 feet long, opened by McBean above the first bore-hole. The floor is a dark-gray, fine, coherent sandstone; the roof and overlying rocks are similar. Two other seams of coal, six and four inches thick respectively, were also cut in the deeper hole, as well as a band of red shale six or eight feet thick. The proportion of the core lost in drilling was very small. Some of the light-coloured shales carry *Asterophyllites*, *Cordaites* and other plants, and certain layers consist of a mass of fossil shells beautifully exposed in a cross section.

Explorations at Little river mine.

The red cores taken from a boring immediately north of the mine at Little river indicate either that red strata overlie the coal seams there or that a fault intervenes between the bore-hole and the workings. The latter supposition is that adopted in the map of 1884. On the railway, east of the Buchanan road, a belt of red shale appears to underlie the dark shales on the north side of the basin mentioned above, or along the fault shown on sheet No. 21. Eastward along the railway, dark shales have been cut, but no red strata, and near Shannon lake there are good exposures of gray sandstone like that of the shore south-east of Coal brook. Above the railway bridge over White brook, greenish and gray and drab argillaceous shales and fine sandy flags are succeeded by reddish sandstone, more or less argillaceous, striped or banded, with a nearly vertical northerly dip, an attitude found among similar red rocks in the Falls brook to the westward. From the deep shaft at Rory McDonald's, red shale, like that of Hawkesbury, was thrown out.

Evans island.

On Evans island, search has been made in the gray, blackish and rusty argillaceous shales, many of which contain nodules of ironstone and small seams of coal not far from outcrops of gypsum, as at Little river. Mining has also been resumed at Seacoal Bay (Port Malcolm) mines in the Richmond coal-field.*

Bore-hole for coal at Glendale.

Early in the autumn the calyx drill was removed from Coal brook to Glendale to test the rocks which lie beneath the coal seam described in the section on page 99F of the Report for 1879-80, near which several thousand dollars had been spent in prospecting. In that report it was stated that 'the quantity of available coal in the basin even if the seam were much larger, would be extremely small,' but the possible existence of other seams was also suggested. A bore-hole was put down to a depth of 500 feet, chiefly in gray and reddish argillaceous shales; but no other seams were found. It was begun at the foot of a steep bank of black shale overlying the coal seam. Down River Inhabitants nearer the bridge, borings were also made by Mr. James McDonald, M.P.P. and others, in which coal was found, but apparently not in workable quantity.

At Port Hood mines.

Later in the season, the drill was taken to make trial of the number and thickness of the coal seams in the Port Hood basin, and two holes were bored in the strata underlying the main seam without, however, cutting any other workable seam.

Deep boring north of New Glasgow.

The Pictou Exploration Company is using another of the government calyx drills, which has a capacity of 3,000 feet, to test the

* Report for 1879-80, Part F, page 121.

measures underlying the New Glasgow conglomerate on the west side of the East river Pictou, below Trenton. The drill was placed in Rear brook, where a plentiful supply of fresh water is available, and the rock is in situ with nearly horizontal bedding. Transportation to the spot was convenient, and repairs of all kinds can be readily made in New Glasgow; so that, although the depth to be bored here in order to pass through the whole thickness of the conglomerate and overlying rocks may be somewhat greater than at the mouth of Begg brook, on the Middle river, another site suggested, this advantage may be compensated by those mentioned above and also by the strong probability that being nearer the large seams of the Pictou coal-field south of the North fault, these seams may have an extension in workable form towards this bore-hole, which must in any case be a deep one. It has been put down already to a depth of nearly 600 feet, or about 200 feet into the conglomerate.

Foxbrook and Hantsport boreholes.

In the same county at Foxbrook, south of the coal measures of Westville, a hole has been bored nearly 400 feet, with one of the smaller diamond drills belonging to the provincial government, chiefly through red sandstone and shale coloured as probably Lower Carboniferous on sheet No. 47 of the Nova Scotia series of geological maps.

Boring for oil at Cheverie.

By the enterprise of a few citizens of Hantsport a hole has been bored 1,300 feet with a third government calyx drill, in charge of Mr. Clarence Smith, of that town. The site chosen is in a brook near the boundary between the counties of Hants and Kings, half a mile west of the railway station, at a point where search had previously been made for coal. Gray sandstones and shales of the Horton series, known elsewhere to contain important quantities of albertite, rich bituminous shale and petroleum, lie in the brook with a low northerly dip. To a depth of about 300 feet the drill cut chiefly light and dark gray fine sandstone, underlaid by bluish gray coherent argillaceous shale, containing a few plants and bands of ironstone, to 800 feet, below which gray sandstone prevails. Some of the shales are said to have yielded the characteristic odor of petroleum. At 150 feet a strong feeder of water was struck.

Bore-holes at Lake Ainslie and Skye Glen.

On Cheverie brook, boring for oil has been begun with a cable drill; and it is hoped that a thorough test will be made of this district, the promise of which was pointed out by Professor H. Y. Hind, of Windsor, more than thirty years ago. In a report on the petroleum indications at Cheverie, Professor Hind stated that although 'feeble external indications are not generally sufficient of themselves to warrant an immediate expenditure of capital, especially in a region where natural petroleum springs are not known to exist at the present time,' yet

that 'the evidences of the existence of petroleum at Cheverie are sufficiently strong to warrant the expenditure of capital in a systematic exploration by means of bore-holes.' Oil and bitumen have been found in cavities, joints and fissures of a mass of gypsum, largely quarried in this neighbourhood, which overlies a great body of black shales containing numerous remains of plants and animals and thus 'supplying the material for the supposed source from which petroleum has originated.' The age of these shales is that of oil-producing strata of other countries, the structure of the rocks seems 'favourable to the accumulation and preservation of petroleum,' and there is, consequently, presumptive evidence that deep boring might reach stores of petroleum. 'Exploratory bore-holes can alone decide whether these stores have been exhausted at Cheverie by long continued overflow,' and the cost of such bore-holes should not be very great. Wells have been bored in the oil district of Lake Ainslie, in Cape Breton, *3,260 feet and to a much greater depth at Gaspé, in search of oil. Explorations were made last summer at Skye Glen, one well having reached a depth of more than 1,100 feet, but without success.

Manganese and limestone at Walton.

In this connection a cursory examination was made of the district between Walton and Noel, in which bands of the dark slates and flags of Split Rock and Cheverie also occur, the overlying sandstones and shales being also found near Cheverie. Succeeding these Devonian rocks at the manganese mines west of Walton is a reddish flaggy limestone or marble, overlaid by gray massive limestone. In and near the limestone occur ores of manganese and other metals (1) and it seems probable that, as the demand for limestone leads to the quarrying of these beds along the contact, bodies of these ores will be discovered, as large as any that has been mined, without the expense and uncertainty that at present attends their extraction.

In continuation of the bore-holes put down by the Hon. David MacKeen along the outcrop of the Tracy seam (2) a diamond drill hole was bored by Mr. Cottrell, to a depth, it is said, of more than 300 feet, near Murdoch McLean's. Halfway between Cochran lake and Macdonald lake (sheet No. 135), in a slope from which coal was taken last winter for local consumption, the seam is said to have measured four feet five inches. It is hoped that these explorations will be extended further to the westward.

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*Report of Progress Geol. Surv., Can., 1882-84, Part H, page 90, and Annual Report, vol. X. (N.S.), page 102A.

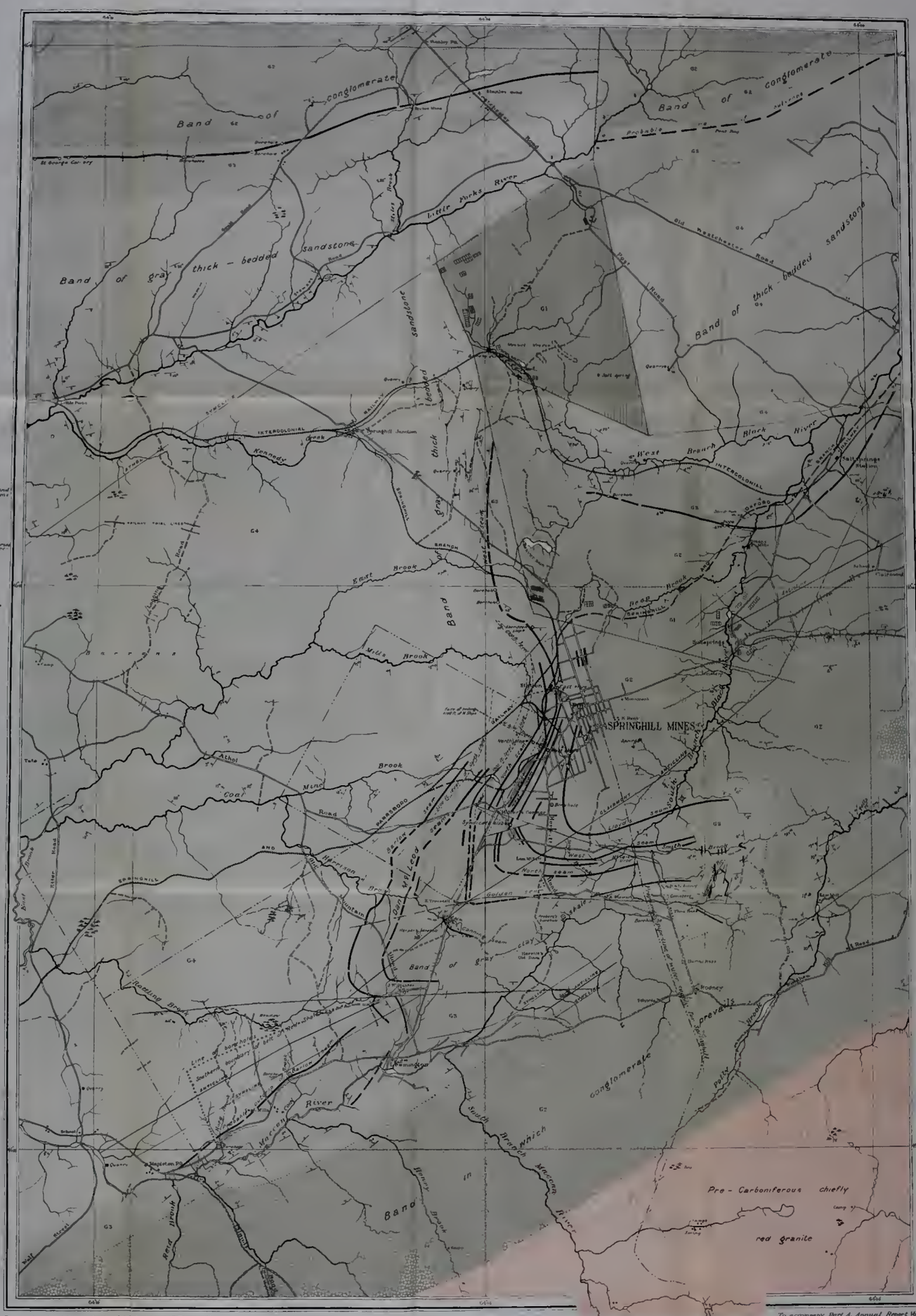
1 Jour. Can. Mining Inst., vol. I., p. 227.

2 Sum. Rep., Geol. Surv. Can., 1901, p. 208.

Geological Survey of Canada

ROBERT BELL Sc.D. LL.D. M.D. F.R.S. ACTING DIRECTOR

1904



Explanation of Colours and Signs

- Permian — Gray and red sandstone and shales overlying coal seams
- Coal measures
- Millstone grit — Conglomerate and grit series underlying the coal seams
- Carboniferous limestone
- Pre Carboniferous mostly red granite
- Dip and strike
- Horizontal strata
- Faults
- Limestone
- Gypsum
- Basalt

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" " Vol. XIII. 1900. Part A. pp. 162-163
" " Vol. XIV. 1901. Part A. p. 214
" " Vol. XV. 1902. Part A

Drawn for photolithography by J.A. Hubert and P. Frenette

To accompany Part A. Annual Report Vol. XV

No. 812

Price 10 cts

PRELIMINARY GEOLOGICAL MAP

of part of

SPRINGHILL COAL FIELD

CUMBERLAND COUNTY, N.S.

To illustrate Report

of

HUGH FLETCHER B.A.

Scale of statute miles and chains

Chains 40 30 20 10 0 1 2 Miles

On the Mullins seam.

The Mullins seam also was exploited in a shaft near Senator MacKeen's bore-hole at Lynk lake, where it is stated to be four feet and a half thick, instead of three feet as in the section given of the bore-hole ([3]).

A visit was also made to recent developments by Mr. C. A. Meissner for the Dominion Steel Company, among the crystalline limestones of Eskasoni ([4]) in the immediate neighbourhood of the interesting exposures of Cambrian fossiliferous rocks studied by Dr. G. F. Matthew ([5]). Although the developments failed to discover limestone suitable to supplement that at present obtained in large quantity for the furnaces from the Marble mountain of West bay ([6]) yet they afforded interesting contacts with the surrounding felsitic, gneissic and syenitic rocks.

Gold of Middle river.

I also visited Middle river, in which several Chinamen have been washing for gold and Mr. Scranton has erected a small crusher and is still mining the quartz veins of the Second Gold brook ([7]). His trenches and pits have exposed several veins from four feet downward and into one of these he has driven a long tunnel on the line of strike of the inclosing slates. In the quartz there are fine samples of gold resembling that found in the sand of the brook, finely spattered throughout the veinstone or in leafy layers in the joints.

Examinations on Cumberland basin.

During a portion of the months of July and August, I was with Mr. H. S. Poole and Dr. R. W. Ells at some of the more important Carboniferous sections on the Nova Scotia and New Brunswick shores of Cumberland basin and Chignecto bay ([8]) to compare the different series of Carboniferous rocks with those of the well-known section at the Joggins. The difference between the lowest beds of this section and those called Permo-Carboniferous is well seen on Minudie point, where the latter consist of gray, blackish and red coarse glistening sandstone, with a few bands of red argillaceous shale, pebbly patches and friable conglomerate, like the Permo-Carboniferous of other districts, but also like certain beds below the Millstone-grit at Downing cove.

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[3] Sum. Rep. Geol. Surv. Can., 1901, page 209.
[4] Report of Progress Geol. Surv. Can., 1876-77, pp. 411, 127, 456.
[5] Sum. Rep. for 1901, p. 225 and Matthew's Report on the Cambrian of Cape Breton. (Just out.)
[6] Report of Progress Geol. Surv. Can., 1877-78, pp. 29 to 32F.
[7] Annual Report Geol.Surv. Can.,1882-84 (N.S.),part H., pp. 29 and 97; Professor Woodman's report to the N. S. Department of Mines, 1898, page 12.
[8] Sum. Rep. Geol. Surv. Can. 1902, p. ——.

Line of bore holes near Mapleton.

In extension of the borings of 1901 westward from Leamington towards Mapleton, ([9]) sixty-six holes, seventy-two feet deep and under, were bored on a line following the south side of Rattling brook for about two and a half miles to Hoeg brook, along a belt of gray argillaceous shale and sandstone overlaid by red shale and sandstone, the whole series apparently overlying the coal seam passed through near the top of the 715 feet bore-hole at Mapleton. ([10]) The gray strata resemble in texture and composition those below the coal measures of the south branch of Black river, but on that section, as elsewhere stated, no red rocks appear. Moreover, no fault has been detected that could separate these rocks from the coal measures to the northeastward, and the tracing of the small coal seam eastward from the Mapleton bore-hole has made its identity with the Barlow seam, more than ever probable. In any case it is important that this region should be thoroughly explored, since, even if these are lower measures, we might expect that, with their north-westerly dip, they would be overlaid somewhere by strata containing workable seams of coal.

Barlow seam.

Upper Maccan river.

The Upper Maccan river, below Captain Mills, seems to follow a flat anticline, the dips being at a very low angle. In adjoining brooks, which enter from the north below Hoeg brook and near the Etter road, the opposite dips of another anticine are well defined in a gray sandstone full of fossil plants. Above these brooks the river bank shows more than fifty feet of red argillaceous shale, probably that found by bore-holes far to the eastward of Hoeg brook.

In Henry brook, red rocks, precisely like the latter but probably much lower, have a low northerly dip, are interstratified with gray fine sandstone, and are succeeded to the southward by gray sandstones and shales containing rootlets. At and above the fork, coarse grit and conglomerate occupy the brook.

Coal probably traced to Hoeg brook.

The strike of the small coal seam at the deep Mapleton bore-hole would, if produced, carry it to Hoeg brook near the road. Here also a quantity of drifted coal was found in the brook near Mr. Willard Gilroy's house. Two boreholes put down hereabout found apparently the two bands of red shale and sandstone that underlie at no great depth the coal seam, which must in this event outcrop a short distance north of the road. As already stated, this coal is probably the equivalent of the highest seam in the section of Coal Mine brook, and it therefore becomes a question of great commercial as well as scientific

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[9] Sum. Rep., Geol. Surv. Can. for 1901, p. 214.

[10] The cost of and time occupied in this boring are given in the report of the Depart. Mines for Nova Scotia, 1874 page 26.

interest to determine what has become of the underlying workable seams of the latter section and their relation to the conglomerate along the northern slope of the Cobequid hills at Rodney, Mapleton, Southampton, Newville, and Apple river, as well as to that which underlies the coal at the Chignecto mine on the north side of the basin which may be in part or wholly its equivalent.

Relation of coal measures to conglomerate of the Cobequid hills.

Between Mapleton and East Mapleton, a thickness of about 2,500 feet would seem to include all the strata underlying the bore-hole seam to the Pre-Carboniferous granite of the hills. Of this thickness 715 feet cut in the borehole are of fine texture and associated with thin coaly layers. Would this hole if continued have touched the conglomerate of the hills south of Upper Maccan river? Does this latter represent coal measures or other fine sediments at a distance from the hills? Or has a fault or unconformity north of it escaped observation? A glance at the accompanying map will serve to illustrate these questions.

It has been pointed out that on the north side of the syncline which has its axis near the shore at Shulie there are exposed about 1,500 feet of carboniferous strata, while from the same axis southward less than 5,000 feet appear, chiefly coarse sediments which may represent only the upper part of the section on the north side. Mr. John Rutherford in 1870 suggested the probability * that near Apple river, workable seams may lie at a considerable depth from the surface. On the shore section, as on that from East Mapleton to the Springhill coal mines, no great fault has been observed; and the geological structure as now understood seems to justify the boring of one or more deep holes in the hope of determining whether the workable coals are cut off by faulting, replaced by barren strata along this line, or concealed by unconformity or overlap, and can yet be reached and mined.

Possibility of reaching workable coals by deep boring.

Work has been vigorously prosecuted at the Springhill mines, and a smaller yield of coal obtained from the Joggins, Jubilee, Strathcona, Chignecto and other mines on the north side of the Cumberland coal basin. The Chignecto colliery has been reopened by the Maritime Mining Co. and the slope sunk to a depth of 825 feet.

Coal mines.

In my investigations I have has been again greatly assisted by the kindness of Mr. J. R. Cowans, the gentlemen mentioned on page 214 of last year's Summary Report, Messrs. J. A. Johnson, J. G. Rutherford, David Mitchell, James Baird, G. B. Mills, and others.

Acknowledgements.

* Trans. North of England Inst. M. E., vol. XIX, page 117.

Copper ore of Cumberland county.

Some time was spent in an attempt to define more closely the boundaries of the various subdivisions of the great mass of carboniferous sediments lying between Maccan and Tatamagouche rivers, in the area covered by sheets 59, 60, 61 and 62 of the Nova Scotia series of geological maps. These strata include the copper ores of Chisholm and Canfield creeks, the Palmer and Chisholm mines and other workings in the Wallace, Philip and Pugwash rivers, which have yielded no adequate return for a very large expenditure of money during the last ten years; the unimportant outcrops of coal at Roslin Hill, South Victoria, Conn's mills, Malagash point, Oxford junction and other places; the gypsum and selenite of Plaster cove, Saltsprings and River Philip; and the celebrated gray sandstone of the Wallace quarries. As these examinations are still unfinished, the results will not at present be referred to. The difficulty of distinguishing the gray sandstone of the Upper Carboniferous of Ragged reef from the Millstone-grit sandstone of the Lower Cove quarries, the Lower Carboniferous red shales and sandstones of Downing cove from the Upper Carboniferous of McCarron cove, and other groups on the Joggins section, gives some idea of the difficulties encountered when these rocks are traced inland towards Athol, Mapleton and points farther east, where exposures are not so good and large portions of fine sediment are replaced by coarse grit and conglomerate.

Copper ores.

The mode of occurrence and the character of the copper ore of the district have been sufficiently described in the Annual Report for 1889-91, part P., page 186. It is in the form of nodules and films of chalcosite usually in dark-gray and blackish more or less carbonaceous beds.

The Lower Carboniferous marls near the mouth of Pugwash river are used as a source of supply for the brickworks; and the adjoining beds of limestone have been extensively quarried.

Brookfield iron mine.

With Mr. F. H. Chambers, the manager, a visit was paid to the Brookfield iron mine, the ore from which is shipped over a short tramway to the Intercolonial railway for use at the Ferrona furnaces. From this deposit, described in the Annual Report for 1889-91, part P., page 177, as near the contact of Devonian and Carboniferous rocks, 20,000 tons of excellent limonite are said to have been extracted. The ore is near the surface, overlying Lower Carboniferous rocks having been eroded, but in the immediate vicinity is a gray limestone of this formation, so that some of the hollows or basins separated by protrusions of Devonian strata seem worthy of being tested.

Surveys by McLeod and McKinnon in Kings and Annapolis.

My assistants, Messrs. M. H. McLeod and A. T. McKinnon, in Kings and Annapolis counties surveyed the district westward from Salmon-tail and Gaspereau lakes, for sheets Nos. 98 and 99, their south line running from Salmon-tail lake to the Nictaux river and being in granite as far as Allan lake. North of the granite lie Cambrian and Silurian slates and quartzites which are in contact with soft, crumbly sandstone of Triassic age, along the foot of the South mountain. This sandstone, deeply eroded in the valley of the Cornwallis and Annapolis rivers, rises to the summit of the North mountain where it is cut off by basaltic trap. The section is thus similar to that between Gaspereau river and North mountain, described in the Summary Report for 1901, page 211 and illustrated by an accompanying map. The district joins that described in the Summary Report for 1894 and again, by Professor L. W. Bailey, in Vol. IX, Part M. In its western portion lie the iron mines of Torbrook and Nictaux.

Minerals for collections.

The roads were surveyed with odometer, the brooks and lakes chiefly by pacing between the roads. From September 25 to October 4, Mr. McKinnon collected minerals in Cumberland county to be used for educational collections; he obtained two barrels and a half of fibrous gypsum at Clarke head * and two and barrels a half of agate at Two Islands, packed the specimens and forwarded them to Dr. Bell at Ottawa.

District adopted to agriculture and fruit growing.

Except in the western part, there are few minerals of economic value, but the district is well adapted to agriculture and fruit growing. Besides the apples, plums, pears and other fruits for which the region is noted, the culture of the cranberry has for some years afforded a profitable means of utilizing the bog lands of the Annapolis valley between Kentville and Middleton and has become one of its most important industries. The large Aylesford bog and other flats in which the water can be drained to about a foot beneath the surface, after the removal of the peat or turf, are extensively used for this purpose. The mud is ploughed, harrowed, mixed with the underlying or transported sand, and planted with vines in shallow furrows about two feet apart. Woods, bushes and grass have then to be kept in check until the vines get matted over the ground and are ready to yield, after which, with a little judicious care, fifty barrels or more to the acre may be gathered for many years, although there may be seasons in which the crop is shortened or even destroyed by frosts in June and September, before the berry has attained its full size, or the berry-worm may cause the fruit to fall off or rot before it is fit to pick.

* Dawson's Acadian Geology, page 105.

South river.

In many parts of the district the rocks are heavily covered with red sand and gravel, but along the banks of the streams they are frequently exposed. On the South river, above the mill at the road west of Morristown, blackish and dark-gray flags, containing much pyrite and some mica, resembling the rocks of the Black river of Gaspereau above Whiterock, are cut like them, by masses of greenish granular diorite, and belong, no doubt, to the upper or clay-slate group of the gold-bearing series. At and above the fork of this river, the slates are foliated and gneissic, interstratified with layers of spotted or andalusite-schist, broken through by masses of red coarse granite; and gray gneiss and granite occupy the eastern branch for some distance until succeeded by granite.

Red and green slates.

A short distance below the mill, blackish slates are succeeded by greenish slates, like those of Canaan, cut by intrusive dykes of greenish and gray crystalline diorite. Below Factorydale, the greenish slates give place to red and green mottled slates, overlaid by bright-red slates; but none of the quartzites of Whiterock appear on this section.

Dykes.

Westward through Harmony and at a school-house and hall, blocks indicate apparently a great dyke of greenish crystalline and compact diorite. On the slope of the hill, just before coming to the Fales river, there is a fine outcrop of light-coloured compact and granular diorite and felsite. Above the bridge on this river, greenish and mottled slates, like those which yield *Dictyonema* at Canaan, becomes very porcellanous where in contact with masses of diorite. Down the river they are less altered, and beyond them come red and green mottled slates, showing fine dendritic markings like those of the brooks of Gaspereau, Highbury and Canaan. On the right bank, between these red slates and the bridge above, a tunnel has been driven into black graphitic slates which occupy a narrow belt about a quarter of a mile below the bridge; and about thirty yards farther upstream is the quartzite of Whiterock, Canaan and Highbury, whitish or spotted with red, tilted at a high angle.

Whiterock quartzite.

Similar red shales and quartzites cross the road to the westward. Near the Annapolis county line, on Messenger brook, the first stream east of East Torbrook post office, there are diorite dykes cutting red and blackish slates, which dip northward, include many beds of quartzite and are overlaid by gray and blackish shales and argillaceous sandstones, full of shells, encriorites and corals. These are similar to the slates near the mouth of the Black river of Gaspereau in which markings of plants were found in 1901; they are also like the slates of Deep Hollow, near Port Williams station, from which were obtained

joints of crinoids. At the top of this section, just before it is concealed by the intervale, to be overlaid next by Triassic sandstone, red and greenish slates, well exposed at the foot of a gorge, contain fossils at first mistaken for *Dictyonema Websteri*, but determined by Dr. Ami as probably a new species of *Tenestella* in the same beds with numerous Silurian fossils of species enumerated by Professor L. W. Bailey in his report on the geology of south-west Nova Scotia.*

On the east side of the brook is the Messenger mine, containing a six-foot bed of hematite, that was mined to a depth of ninety feet, the ore being similar to that of Torbrook.†

Nova Scotia Gold Fields.

Mr. E. Rodolphe Faribault.

Office work by Mr. Faribault.

Mr. E. R. Faribault was engaged during the winter 1901-1902 in plotting the surveys made the previous summer in the counties of Halifax and Lunenburg, Nova Scotia, referred to in the Summary Report for 1901, pages 214 to 221.

Plans of gold district published.

The plans of the gold districts of South Uniacke, Montague and Lake Catcha, surveyed in 1899, and completed up to date and the plan of Tangier, surveyed in 1898, have been published.

The plan of the gold district of Gold river, surveyed the previous summer, was also completed, but its publication has been deferred in the hope of getting more data in the field to work out its structure more satisfactorily. A further examination of the district was consequently made last summer, and although the structure is still incomplete at certain points, it is thought better to have the plan published immediately, as it will be useful to mine owners who are contemplating new developments.

Publication of maps.

Mr. Owen O'Sullivan has made good progress in the compilation of the one-mile to an inch map upon which he was engaged last winter. The compilation extends now as far west as the line of the Intercolonial railway between Elmsdale and Bedford, and from the road leading from the latter place to St. Margaret bay, it extends south-

* Annual Report Geol. Surv. Can., vol. IX, (N.S.) part M., pages 94 to 97.
† Acadian Geology, pp. 563 and 571; Supplement, 1891, page 20.

ward to the shore of the Atlantic. It is expected that the following map-sheets will be ready for publication before leaving for the field :

No. 53, Lawrencetown sheet.
No. 54, Musquodoboit Harbour sheet.
No. 55, Middle Musquodoboit sheet.

While the compilation of the following sheets will be nearly completed :

No. 66, Elmsdale sheet.
" 67, Waverley "
" 68, Halifax City "
" 69, Prospect "

Map of Halifax and vicinity.

The Halifax City sheet will be especially interesting and useful, and it is deemed advisable to issue, for local purposes, a special map of the *city of Halifax and vicinity*, on the same scale, but larger than the ordinary 12 x 18 inches size, with the city as a centre and including Bedford, Waverley, Montague, Cow Bay, Herring Cove and the country to the east and west of the city for some twelve miles.

Field work.

"On the field work accomplished in the Nova Scotia gold-fields during the past season, Mr. Faribault reports as follows :—

In accordance with your instructions, I left Ottawa on June 7, for Nova Scotia to resume last season's surveys in connection with the mapping of the Lower Cambrian gold-bearing series of Nova Scotia and to continue the study of the structure of the gold mining districts of the province.

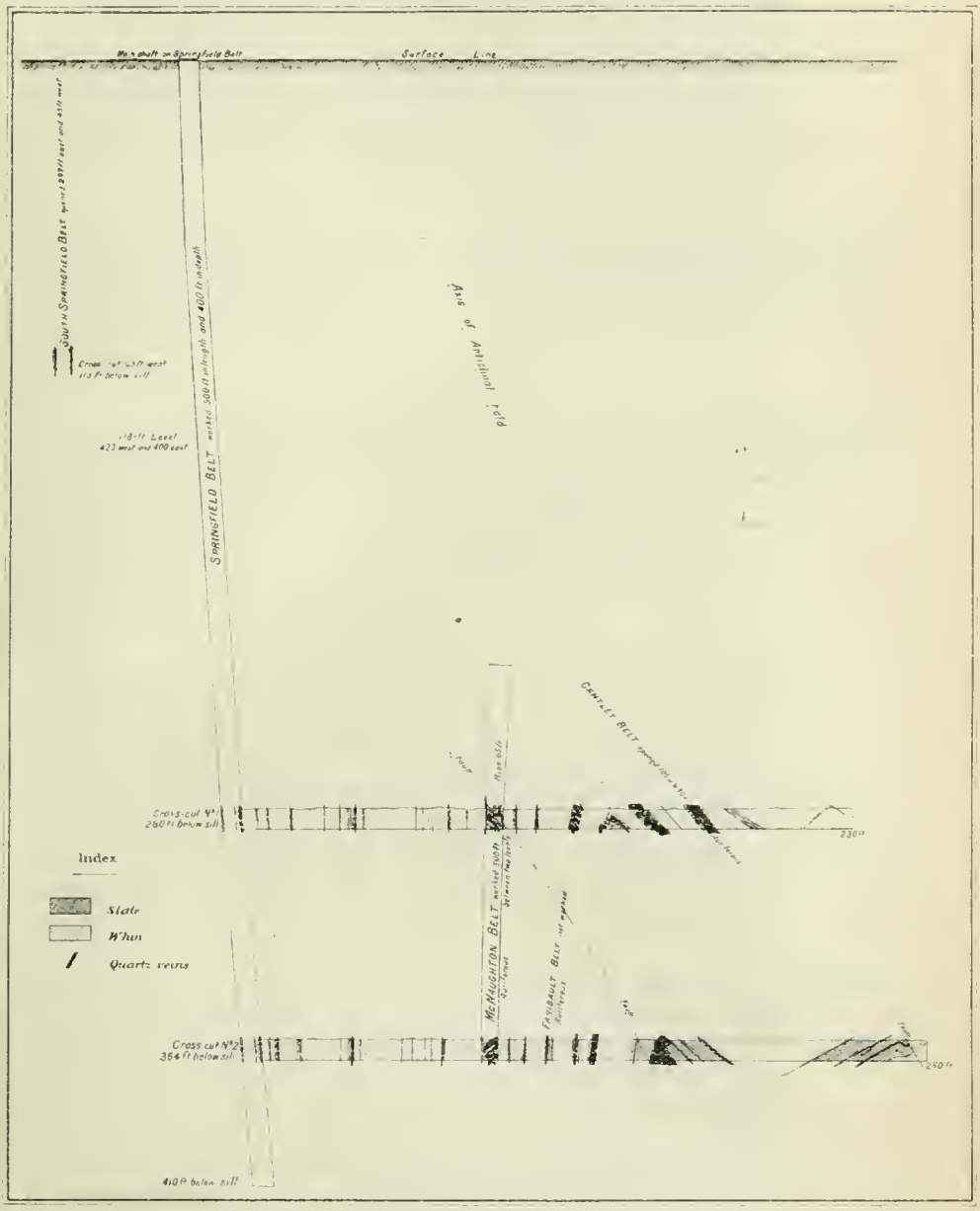
Acknowledgments.

In the performance of my field-work, I have received much information and assistance from miners and other persons, and I wish to offer especially my acknowledgments to Dr. E. Gilpin, inspector of mines ; Dr. M. Murphy, provincial engineer ; Sheriff Donald Archibald, and Messrs. James H. Austin, Crown Lands Department ; Harry Piers, curator provincial museum ; Henry S. Poole, F. H. Masson, Rufus O. Bayer, Joseph H. Austen and Fred. P. Ronnan of Halifax ; G. J. Partington, A. B. Cox, W. F. Fancy, John McMillan, Chas. D. Maze and Stephen M. Giffin of Isaacs Harbour ; Howard Richardson, Frank Sweet and S. R. Giffin, of Goldboro ; S. R. Heakes and Matthew McGrath, of Wine Harbour ; Arthur G. McNaughton and Wm. McIntosh, Goldenville ; George. W. Stuart, Truro ; A. Kent Archibald, Monroe Archibald and John Worrall, of Harrigan Cove ; George Fraser and Laughlin McLean, of Fifteen-mile Stream ; Hon. James D. McGregor and Thomas Cantley, of New Glasgow ; E. Percy Brown, Dr. D. Stewart, C. W. Crowe, T. H. White, C.E., and V. J. Paton, of

Geological Survey of Canada

ROBERT BELL, Sc D. (Cantab.), M.D., LL.D., F.R.S., ACTING DIRECTOR.

1903.



Surveyed by E. R. Faribault, B.A.Sc

TRANSVERSE VERTICAL SECTION

Through Main Shaft and Cross-cuts

BLUENOSE GOLD MINE,

GOLDENVILLE, NOVA-SCOTIA

Scale of feet

To accompany Part A, Vol. XV

No. 806

Bridgewater; J. A. Crease and T. R. Prince, of Mount Uniacke Mines; S. G. Lyman, Renfrew; Charles Thompson, Elmsdale; Levi Dimock, West River Sheet Harbour; L. W. Getchell, Caribou Mines; Robert Kaulbach, Middle Musquodoboit; Charles Keddy, Lake Ramsay, New Ross; Dr. Henry W. Cane, New Ross; Prof. G. T. Kennedy and Dr. H. Y. Hind, of Windsor, N.S.; and H. K. Wicksteed, C.E., Mahone Bay, N.S.; also Marland L. Pratt, Boston, Mass. and Paul M. Curtis, Harvard University, Boston, Mass.

Assistant's work.

I was again ably assisted, during the whole season, by Messrs. Archibald Cameron and J. McG. Cruickshank, who worked in the field until November 19, when they began the plotting of their surveys, which is now completed.

Surveys in Lunenburg County.

Lunenburg county,

Mr. Cameron was engaged the greater part of the season on a survey of that part of the county of Lunenburg which lies west of La Have river and adjoins the counties of Queens and Annapolis.

Mr. Cruickshank assisted me until August 11, in surveying gold districts in the counties of Guysborough and Halifax; then he joined Mr. Cameron in Lunenburg county.

The region surveyed measures 12 miles east and west and 30 miles north and south, or about 360 square miles. It is drained by the western tributaries of La Have river, the Petite Rivière and the head-waters of the Pleasant and Port Medway rivers, and an innumerable number of small lakes and streams. The country is generally well settled, mostly by people of German descent, particularly along the coast and valleys of La Have and Petite Rivière. It includes the town of Bridgewater on La Have river and the gold districts of Leipsigate, Voglers Cove and Pleasant River Barrens.

Gold-bearing series.

The region is underlaid entirely by the gold-bearing series, folded into parallel upheavals and depressions running northeast and southwest. The strata are less tilted than in the eastern portion of the province, the rocks seldom dipping at higher angles than 45 or 60 degrees. A few of the upheavals have the form of broad elliptical domes, less favourable to the development of interbedded auriferous veins than the sharper anticlinal folds further east. Important auriferous fissure-veins, cutting the strata at acute angles, appear, however, to be more numerous, and those operated at Leipsigate and Voglers Cove have already produced good values.

Denudation has also been much less extensive ; as a result, the whin rocks of the lower division of the gold-bearing series have not been brought up so extensively to the surface as to the eastward of Halifax, and the slates of the upper division predominate over larger areas.

Structure.

The structure of the rocks of this region has not yet been worked out in such detail as to determine exactly the anticlines and synclines and the cross faults. A few preliminary notes may, however, be given here on the position of the main anticlines.

Seven anticlines.

Seven anticlines and synclines have been recognized across the forty miles of country stretching between the outside islands off Dublin shore and the northern limit of the county, at an average distance of about six miles apart.

The seven anticlines are met with in the following order from south to north.

1. *La Have anticline :* The most southerly anticline cropping out at the surface is well exposed on Hartland bay where it crosses Pointe Enragée and Goff point and running westerly across the entrance of La Have river, shows on La Have islands, beyond which it passes under the sea.

2. The Ovens anticline : This crops out on Green island, at the entrance of Mahone bay, and extending westerly between East Point and Big Duck islands, it runs through the Ovens mine, Rose bay and Five houses, crosses the mouth of La Have river, skirts Dublin shore and runs through Green bay into the sea.

Gold washing at the Ovens.

At the Ovens washings have often been made of the sands and gravels detached by the action of the sea from auriferous quartz veins intercalated in slate on the arch-core of the anticlinal fold.

3. *Indian Path and Voglers Cove anticline :* This begins at the south end of Aspotogan peninsula, where it occurs immediately south of New harbour and Herring cove, and extending westerly through Mahone bay, it skirts along the north side of South East cove on Big Tancook island, crosses Beckman island at its north end and Lunenburg harbour about one mile south of the town and passes through Indian Path mine ; thence, running more south-westerly, it crosses La Have river at the Horne brook and runs through New Cumberland, Crousetown, Voglers Cove mine and Port Medway.

Indian Path mine.

At Indian Path, a few main leads were developed and a crusher built several years ago, but they have not been worked to any extent.

At Voglers cove, a very promising fissure-vein cutting across the stratification has recently been operated and found rich in gold; and a few interbedded veins have also been prospected. Voglers cove mine.

4. Leipsigate and Gold River anticline: From the town of Mahone Bay, this anticline runs westward, passes the north end of Coveys lake and through the town of Bridgewater on La Have river, to the west of which it developes, through Hebbs and Leipsigate lakes, into a broad dome, formed by its intersection with another anticline coming from the north-east through Maitland forks, Vaughan lake and Gold River gold district.

A hurried examination was made of the gold district of Leipsigate and the following notes may be given, subject to revision. Leipsigate gold district.

The district is situated on the south-western and sharper portion of the dome where an important fissure-vein has been traced for about 6,000 feet in length through four or five different properties, three of which were successfully operated last summer. The vein dips north 70° at the surface and flattens to 55° at the depth of 200 feet, while the strata dip south 50°. The outcrop of the vein describes a long curve almost parallel with the strata; at the German mine it runs easterly across the strata towards the south at a slight angle; further east, at the Micmac mine, it is about parallel with them and at the eastern extremity it curves to the north and crosses the same strata towards the anticline. Consequently the intersection of the vein with the strata pitches eastward at the west end and westward at the eastern end and becomes horizontal between the two. Several pay-chutes already developed seem to occur along the intersections of the vein with certain belts of dark-gray slate favourable to the deposition of gold, hence they should be well defined, of great length (6,000 feet) and should recur underneath one another in depth. The laws governing the occurrence of pay-chutes on the fissure-veins mined at Brookfield, Caribou, Cow Bay, Oldham and Voglers Cove, appear to be the same as those observed at Leipsigate, and they should be well studied to ensure extensive and successful development. At the western end of the district several interbedded veins have also been discovered on the north and south dip, but still remain undeveloped.

5. *Caribou Lake anticline:* This anticline is well exposed at New Cornwall on Caribou lake, on the eastern side of which it is cut off by granite. From Caribou lake it runs south-westerly to the head of Big Mushamush lake and through Sucker lake to the foot of Wentzel lake on La Have river: thence it passes at La Have Branch and runs through Crooks, Wollenhaupt and Prescott lakes.

6. *Pleasant River Barrens anticline:* Begins at the granite on Eisenhauer lake, Newburn, runs south-westerly to the north of West and Rocky lakes and through the head of Church lake, and crossing La Have river one mile below Indian brook, it runs through Maders, Kaulback, Hirtles and Rhyno lakes of the West Branch of La Have, and crosses the Barrens and Upper Shingle lake of Pleasant river, where the fold develops into a very broad dome.

Pleasant River Barrens gold district.

Several promising, gold-bearing, interbedded veins have been developed on the north-east and south-east portions of the dome in the so-called gold district of Pleasant River Barrens, and rich ore has lately been developed, but no important mining operations have yet been undertaken on any of the leads discovered.

7. *Ohio River anticline:* The most northerly anticline has not yet been well determined, as the surveys are not completed. It occurs a short distance north of Hirtles stillwater on the head-waters of the North Branch of La Have river and crosses the Ohio river about three miles north of the New Germany and Pleasant river main road. At Mosers Corner and Meisners Settlement it is cut by a southern expansion of the main granite mass which underlies the region to the north.

Several cross-country faults have disturbed the continuity of these seven upheavals, but more detailed work is required to locate them.

Gold Districts Surveyed.

Gold districts surveyed.

My own work in the field was confined chiefly to a closer study of the structure of several gold-mining districts in the counties of Guysborough and Halifax. The first part of the summer until the 11th of August, was spent in making detailed surveys of the gold districts of Isaacs Harbour, Cochran Hill and Wine Harbour in Guysborough county and of HarriganCove and Beaver Dam in Halifax county, with a view to preparing special large scale plans of these districts. The surveys were for the most part plotted in the field and the plans will be completed for publication this winter.

Some preliminary notes may be here given on these districts, relating to the character of the auriferous veins already worked and their intimate relation to the structure of the anticlinal upheavals, with some conclusions on the zones of special enrichment and the possibility of developing a succession of new workable veins, similar to those mined at Bendigo, Australia, to a depth of 4,000 feet.

Isaacs Harbour Gold District.

Isaacs Harbour gold district.

The provincial department of mines has grouped under the name of Stormont District, the gold districts of Isaacs Harbour, Richardson (Upper Seal Harbour), Country Harbour Narrows and Forest Hill, spread over a tract 75 square miles in extent. Of these, Isaacs Harbour has been the most worked. It is situated on Isaacs Harbour, on the Atlantic coast at a distance of 50 miles to the south of Antigonish, a station on the Intercolonial railway, and it extends westward to Country Harbour and eastward to Seal Harbour.

Three weeks were spent making a special plan of the gold district of Isaacs Harbour, on the scale of 500 feet to an inch and it has since been completed. It covers an area of two miles and a half long by one mile and a third wide, extending on the east side of the harbour from Victoria mine to Bettys cove and on the west side from Peter Sinclair's hotel to Ragged point.

The plan comprises all the auriferous veins discovered on both sides of the harbour. On the eastern side of the harbour it includes the Victoria, Goldfinch, Mulgrave, Skunk-den, Hurricane Point and Dung Cove mines, and on the western side, the North Star and Burke mines. It does not comprise, however, the Richardson and Doliver Mountain mines, now extensively worked, which are situated two miles and a half farther north on the Upper Seal Harbour anticline crossing Isaacs harbour at its head, a special plan of which was published in 1897.

The rocks underlying the area covered by the plan are the quartzose-sandstones, called 'whin,' and interstratified slates forming the lower division of the Lower Cambrian gold-bearing series of Nova Scotia.

Three anticlines.

These rocks have been plicated into three main anticlinal folds running parallel in an easterly and westerly direction across Isaacs harbour. They have been called the north, middle and south anticlines of Isaacs harbour.

All the veins discovered in the district are interbedded veins formed during the process of folding along the stratification planes on the arch-core or limbs of these three anticlinal folds.

Faults.

The original structure of the folds has been much disturbed transversely by a great dislocation coming from the north-west and follow the North-west Branch brook to the head of the harbour, as shown on the published plan of Upper Seal Harbour. From the head of

the harbour it runs S. 15° E. (magnetic) and passes between Hurricane Point and the eastern shore and through Webb cove and Dung Cove, giving a horizontal, left-hand throw of some 1,200 feet to the north on each of the three anticlines. Several minor faults have also been determined, branching off in a north-easterly direction from the main harbour fault.

Doliver Mountain fault.

Recent developments, made by Mr. G. J. Partington on the Doliver Mountain property, have proved that one of these faults is farther east than indicated on the published plan of Upper Seal Harbour gold district. It has a horizontal throw of some 400 feet and follows, very probably, the course of the Davidson brook, in a south-westerly direction, to the harbour where it joins the main harbour fault.

The three upheavals are best observed along the western shore of Isaacs harbour, where a continuous section of the strata is well exposed from Holly point to Ragged point.

North anticline North Star mine.

Isaacs Harbour north anticline.—This anticline is well defined at the North Star mine where mining developments show the Grant, Saddle, Little Saddle, McPherson and Burke leads to curve inside and underneath one another on the arch-core of the anticlinal fold and pitch to the west at an angle of 18° from the horizon. On the north leg, the strata dip north at angles increasing gradually, from 45° on the Grant and Burke leads to 75° at Holly point; while on the south leg the dip increases abruptly to 75°, flattens again and curves in the synclinal fold of the North Star lead, 120 feet south of the anticline.

In depth, the axis-plane of the folds dips about vertically.

Hurricane Point mine.

The course of the anticline is N. 56°. W. (magnetic), and that of the syncline is N. 59° W., the folds converging eastward under the harbour; and, at Hurricane point, they are only 12 feet apart and form a crumple very favourable to the development of rich auriferous veins conformable with the strata, one of which, the Hurricane Point lead, crops out at the surface and has already been much worked and yielded handsomely. Immediately east of Hurricane point, the crumple is cut off by the main harbour fault and thrown north some 1,200 feet; it shows on the eastern shore where it developes rich rolls on the Mulgrave leads.

Rich saddle-veins.

It is noteworthy, that all the veins cropping at the surface along this crumple have proved rich, although sometimes too small to be worked profitably. The North Star lead has been mined on the western pitch of the north limb of the synclinal fold to a depth of 492 feet,

while the others were worked on the western pitch of the anticlinal fold, viz: the Saddle lead 180 feet, the McPherson lead 120 feet, the Burke lead 258 feet, while the Hurricane Point, the North Mulgrave and the Mulgrave leads have been mined respectively 430, 400 and 2,200 feet in length and 160, 190 and 220 feet in depth.

Deep mining.

The mining developments at the surface show that the paying portions of the veins are of great length and well defined, and that they are confined to the crumple, along which they form a rich zone which has been proved to extend from the North Star lead to the Mulgrave, a length of about one mile and a quarter.

In depth, the zone of special enrichment extends likewise along the nearly vertical axis-plane of the fold and form a succession of rich superimposed crumples and rolls to great depth.

Vertical shaft.

No mining has yet been undertaken to develop this succession of crumples and rolls in depth. Encouraged by information received from this department, the Hurricane Point company made an attempt, two years ago, to develop a crumpling underneath the one they had already worked so successfully on the Hurricane Point lead, but at the depth of 170 feet operations were, unfortunately, discontinued just as the crumple was being reached and the vein was improving in size and value.

Mulgrave mine.

All the facts show conclusively that this anticlinal and synclinal system of pay-chutes offers a great field for deep mining by means of vertical shafts. Thus a vertical shaft sunk on the anticline near the Burke lead would probably cut a succession of superimposed saddle-veins of payable values, and cross-cuts driven 100 feet south at different levels would develop inverted, auriferous saddle-veins, on the synclinal fold, pitching west 18° and outcropping eastward under the harbour. The Hurricane Point lead would be cut at the approximate depth of 650 feet. Likewise, a vertical shaft sunk on the anticline at Hurricane point would cut a succession of crumples similar to and probably as rich as that mined by the Hurricane Point Company.

On the east side of the harbour a very rich pay-chute or roll, pitching westerly under an angle of 12°, was extensively worked on the Mulgrave lead for a length of 1,200 feet and a maximum depth of 210 feet. This pay-chute is undoubtedly the eastern extension of one of the superimposed rolls of the Hurricane Point flexure thrown this far north by the harbour fault.

The axis-plane of the flexure runs here horizontally S. 58° E. and dips about vertically, while the interstratified veins run S. 63° E. and

dip north 62°. Large rolls of auriferous quartz were formed along the intersection of the veins with the axis-plane of the flexure, pitching westerly 12°. The rich roll worked on the Mulgrave lead is one of these and it should extend westerly beyond the actual workings to the harbour fault and be succeeded vertically by other rolls underneath one another on the veins outcropping to the south of the Mulgrave lead. This system of rolls offers great possibilities for deep mining if properly developed. It can be best developed by means of a vertical shaft and cross-cuts, or by sinking a shaft on the Mulgrave lead, below the pay-chute already worked and cross-cutting south at different levels.

Victoria mine.

At the Victoria mine, on the eastern shore of the harbour and 1,500 feet to the north of the Mulgrave, a roll of auriferous quartz, reported to be ten feet thick and pitching east 35°, has been worked for some 200 feet in length and 105 feet deep. At the Goldfinch mine, 2,100 feet to the south-east of the Victoria mine and 1,380 feet to the north of the Mulgrave lead, a roll of paying quartz, 12 inches thick and pitching east 15°, was mined 300 feet in length and 90 feet deep. It is remarkable that these two rolls, as well as the auriferous drift found on the shore to the north-west of the Victoria and 1,500 feet to the south-east of the Goldfinch mine, are all situated along the same line, running S. 59½° E. and parallel with the Mulgrave line of pay-rolls, but with the difference that on the latter the rolls pitch westward. As the strata strike S. 65° E., the Victoria-Goldfinch line of rolls intersects them at a slight angle, and probably forms a succession of auriferous rolls occurring on certain belts towards the south-east which might prove productive if developed.

Goldfinch mine.

Fault.

A left-hand fault was located on lot 18, block 2, eastern division. It runs down the Dung Cove brook S. 37° W. to the salt water pond, where it intersects the main harbour fault, and gives a horizontial throw of 130 feet north on the Mulgrave lead and about 250 feet on the Mundic lead which corresponds to the Skunk-den lead.

Undeveloped veins.

The rich float found to the east of this fault and south of the Mulgrave lead is derived undoubtedly from rolls formed on the Bliss, Slate or other leads at their intersection with the eastern extension of the flexure, and developments should therefore be undertaken in this direction.

Middle anticline.

Middle anticline.—The middle anticline could not be located as well as the north, because the rocks are concealed and developments have not yet been sufficient along its course.

On the western side of the harbour it occurs 500 feet south of the lighthouse, where it is concealed by a sand beach and salt water pond,

and it extends westerly to Country harbour, covered by drift showing debris of gold-bearing quartz.

It runs easterly across the harbour into Sculpin cove, immediately north of Salmon rock, and extends to the main harbour fault, where it is thrown north some 1,200 feet; beyond this, it runs south of east, 550 feet south of the Barry lead, to the Dung Cove brook fault, where it is thrown north 250 feet, and resumes its course towards the head of Crane pond on Bettys brook.

This fold is broad, both limbs dipping at angles increasing gradually to 65° on the north and 55° on the south. The developments have not yet been sufficient to determine the zones of special enrichment, but rich float found along its course proves the occurrence of payable veins. The structure of the fold shows that a zone of such veins will probably be found on both limbs, but at some distance from the axis, where the angle of dip is over 50°.

Skunk-den mine.

The only important leads developed are situated 700 feet north of the axis, at the Skunk-den mine, where a pay-chute dipping east 18° was worked on the Mundic lead for a length of 700 feet and a depth of 120 feet. A large block of rich quartz was discovered immediately south of the Mundic lead, but the vein from which it came has not yet been discovered.

Rich veins along synclinal fold.

On the east side of the main harbour-fault and about 1,100 feet south of the middle anticline, a rich belt of leads, called Hattie belt, 21 feet wide, was worked many years ago, by open-cut on the Gisborne property for a length of 360 feet and a depth of 110 feet and more recently on the Griffin property, and it was uncovered eastward beyond a 50-foot fault for 1,400 feet. The leads are conformable with the strata and dip south 55° to the depth of 110 feet, where they curve rapidly and the quartz pinches out in a synclinal fold, to the south of which the strata are shown in a cross-cut to dip north at a low angle with little or no quartz. The quartz was reported exceedingly rich on the north limb of the synclinal trough.

Red Head gold drift.

Very rich float was found to the south of this belt and a great deal of prospecting was done by David Buckley and others to locate the veins, but without success. Doubtless the float comes from another rich vein in the synclinal trough, superimposed to and to the south of the Hattie belt. Likewise, the rich drift found on Red head is derived probably from the north limb of the synclinal fold, thrown this far south by the main harbour fault, possibly in the vicinity of the McMillan and other belts of lead cut along Sand cove. This is one of

the few instances in which rich veins have been observed to occur in a synclinal fold in Nova Scotia, but in Bendigo, Australia, such veins have been mined in a few cases.

To develop these synclinal veins successfully vertical shafts might be sunk along the axis of the trough. A succession of superimposed V-shape veins would thus be cut through which should be especially rich on the south dip.

South anticline.

South anticline.—The Isaacs harbour south anticline is well exposed at Ragged or Bear Trap point, and for about one mile farther west along the shore of Country harbour, where a few cross-veins have been observed. On the eastern side of the harbour, it passes at the south end or a little to the south of Red head, and some of the auriferous debris washed in from the sea may possibly come from veins situated on this fold, if not from the above mentioned synclinal fold.

East of Dung cove, the anticline is thrown north about 1,000 feet by the main harbour-fault, and it crosses the road at a sharp turn where David Buckley has developed a flat lead dipping north and south on the apex of the fold. Its extension eastward is heavily covered with drift. Auriferous drift and a few veins are reported to have been discovered at Bettys cove, to the south of this anticline.

Seal Harbour rich drift.

A great deal of prospecting has been done two miles east of Isaacs harbour, along a line of extraordinary rich drift, running south $2\frac{1}{2}^{\circ}$ east towards the eastern side of Crook cove. It is believed that the drift comes from the intersection of a cross-country vein with certain belts or interbedded veins which are especially well mineralized and are possibly the eastern extension of some anticlinal system of veins.

The total production of the Stormont district given in the official returns of the Provincial department of mines from 1862 to 1901 inclusive, is 245,409 tons crushed, yielded 78,750 ounces, valued at $1,496,266, average yield per ton $6.10. Of this, probably one half and the richest ore was produced by the Isaacs Harbour mines, the Richardson mine having mostly given low grade ore.

Every mine in the Isaacs Harbour district is now abandoned, but important developments are in contemplation.

Cochran Hill Gold District.

Cochran Hill anticline.

The gold district of Cochran Hill is situated in Guysborough county, on the east side of St. Marys river, ten miles north of the town of Sherbrooke and thirty miles south of Antigonish, by the coach road.

One week was spent surveying the structure of the formation and a plan has since been prepared on the scale of 500 feet to an inch, which is now ready for publication. It includes Crows Nest and Cochran Hill mines which are nearly two miles apart on the same anticlinal fold.

This fold is the sharpest one known in the province and is much inverted to the south, the north limb dipping north 60° while the south limb is overturned and dips north 75°. The axis-plane of the fold should thus dip northerly at an angle of 68°.

The general course of the anticline at the surface is S. 82° 45′ E. (magnetic) and it pitches west at an angle of about 15° or 20°.

At the Crows Nest mine the anticline was located at a bluff of rock situated immediately east of the mine's road, and half-way between the mill and the manager's house, on area 916, block 75. It was traced eastward, up a steep cliff, across Cochran hill and the main coach road, to Cochran Hill mine, where it passes at the south corner of the quartz-mill and is well exposed 400 feet further on area 486, block 77.

The rocks brought up by the upheaval are the quartzose-sandstones and slates of the lower division of the gold-bearing series. The rocks have been subjected to such great pressure that they have become highly schistose and crystalline, holding fine crystals of staurolite, andalusite, garnet and mica. The cleavage is highly developed, while the bedding plane is almost completely obliterated, and, consequently, the structure of the anticlinal fold is very difficult to make out.

Crows Nest mine.

All the gold-bearing veins operated at both mines follow the stratification plane. A few quartz veins holding mica are also met with, especially at the Crows Nest mine, but they generally follow the cleavage plane and invariably cut the bedded veins when they meet. Quartz mined from one of these at the Crows Nest mine is reported to have yielded a little gold, but it is more likely that the gold came from the encasing slate belt which holds also an auriferous vein—the Belt lead. These micaceous veins are offshoots from granitic dykes occurring in the vicinity and of later origin than the auriferous bedded veins.

At the Crows Nest mine, the Stake, Rose and Belt leads have been worked by different companies, and more recently by the Old Provincial Mining company, for a maximum length of 850 feet and a depth of 100 feet. These leads occur within a width of 60 feet and at an average distance of 200 feet to the south of the anticline.

Cochran Hill mine.

At the Cochran Hill mine a large belt of leads, called the Mitchell belt, and a few other adjacent leads, have been mined from time to time. They are situated at a distance of 300 feet to the south of the anticline. The maximum depth attained is 125 feet on the Ross lead and surface developments have been extended over 1,800 feet in length.

The Mitchell belt is 75 feet wide and contains interbedded veins from two to twelve inches wide. It is considered a low grade deposit which could be operated profitably.

Zone of auriferous veins.

The present developments indicate that the relative position of the gold-bearing leads with reference to the anticline is the same at both mines; that the zone of auriferous veins runs nearly parallel with the anticline, at a distance of 200 feet at Crows Nest mine and 300 feet at Cochran Hill mine to the south of the axis, and that systematic developments along this zone between the two mines will probably uncover new gold-bearing veins.

In depth, the pay-chutes dip westerly, parallel with the pitch of the fold, and they probably also recur on the different adjacent veins, towards the north, in a plane parallel with the axis-plane of the fold which dips north at an angle of 68°. Developments and cross-cuts have therefore to be directed towards the north as greater depth is attained.

The rich pay-chutes worked at the Crows Nest mine, on the Stake and Belt leads pitch westerly at an angle of 15° to 20°. Both streaks have been worked out to a fault running south easterly, beyond which they have not been discovered. To find their continuation on the west side of the fault, the extent of the downthrow and horizontal-throw of the fault has to be established. Unfortunately, this could not be exactly determined from the developements made along the fault. The location of the anticline on both sides of the fault shows that it has been thrown to the left for about 50 or 75 feet. The horizontal throw of the leads is probably about the same.

A 20-stamp mill with one Wilfley table has recently been built by the Old Provincial Mining company at the Crows Nest mine, and, at the Cochran Hill mine a 20-stamp mill with two Wilfley tables was newly put in.

In the official returns of the Department of Mines for 1901, the total production of Cochran Hill is incorporated with that of Goldenville, under the title of Sherbrooke district: 264,131 tons of ore crushed yielded 148,477 ounces of gold, valued at $2,821,068, average yield per ton $10.68.

Wine Harbour Gold District.

Wine Harbour gold district.

The gold district of Wine Harbour is situated in Guysborough county, on the Atlantic coast, 16 miles south of the town of Sherbrooke and 56 miles from Antigonish.

Three weeks were spent in surveying the district and plotting a plan on the scale of 400 feet to one inch, to include the whole area under development, two miles long by three-quarters of a mile wide.

The area is underlaid by the quartzose-sandstones, or 'whin,' and the slates of the lower division of the Lower Cambrian gold-bearing series of Nova Scotia.

The measures have been flexed into two anticlinal and one intervening synclinal folds converging towards the west.

North anticline.

The most northerly anticline has been determined on lot 388, block 6, immediately south of Rocky point on Indian harbour, where the rocks dip at low angles increasing gradually, northward to 75° at Fleming cliff, and southward to 45°. It runs N. 74° W. and converges westward with the synclinal, the two joining at a point about 900 feet north of the Major Norton workings, where the strata are exposed laying almost horizontal near the dome of the southern anticlinal fold. A few veins were observed along the shore, 800 feet north of Rocky Point, but none have so far been developed on this fold.

Synclinc.

The synclinal trough occurs between the two anticlines. From the northern extremity of Barachois pond, it runs westerly, passes 150 feet to the north of the old site of Eureka mill, and ends at its junction with the north anticline.

On area 140, block 6, a belt of promising quartz rolls in slate was uncovered in the synclinal trough, which pitches eastward at a low angle, and others probably occur along its course which might prove productive if developed.

Wine Harbour anticline.

The south anticline crosses the south end of Barachois pond, runs westerly N. 65° W. under the boulder clay of Rude hill, passes 100 feet south of the old site of Eureka mill, follows Barachois brook and outcrops at the surface on area 36, block 41, at a distance of 750 feet north of the Major Norton workings, beyond which it is heavily covered with drift and runs westward N. 63° W., passing a short distance north of the Smelt Brook cove of Wine harbour and at the south end of Lake Cooper where it is well exposed.

The south anticline may be considered the main anticline of the district, while the other anticline and the syncline form a subordinate crumple on the north limb of the former.

The north limb on the Wine Harbour anticlinal fold dips north 50° or 60°, while on the south limb the dip increases abruptly to 70°, then gradually to 85°. It pitches easterly at a low angle diminishing towards the west and it forms a dome at the western end of the district which could not be exactly determined as the rocks are concealed.

No leads have yet been discovered on the north limb. All the veins operated and developed in the district occur on the south limb along which they were deposited in fissures following the stratification planes during the process of folding of the measures.

The productive veins have been operated over a maximum length of one mile and a half and a width of 1,600 feet and dip south from 70° to 80°. On several of them very rich pay-chutes have been worked, all of which pitch eastward, like the anticlinal fold, excepting possibly the pay-chute worked on the Eureka lead, which may dip westerly for some local cause.

The present developments show that the paying portions of the veins occur along three well-defined lines or zones, closely related to the general structure of the district, which may be called the eastern, middle and western pay-zones.

Eastern pay-zone Barachois mine.

At the Barachois mine, at the eastern end of the district, a well defined zone of auriferous veins occurs between 200 and 300 feet to the south of the anticline, and pay-chutes pitching east have already been profitably worked on the Romkey, Twin and Hamilton leads. The pay-chute on the Romkey was worked 1,000 feet in length and 200 feet in depth. The leads curve gently eastward towards the anticline and extend to the north end of Barachois island.

Several other veins, some of large size, have been uncovered to the north and south of this belt. They should be developed further west, along the pay-zone extending westward, across Rudehill hand Barachois brook, towards Eureka mine. The extraordinarily rich float, found along the shore at Doody head, has undoubtedly drifted from this zone, the direction of the drift being S. 9° E.

Eureka mine.

At a distance of 2,500 feet west of the Barachois mine on the eastern pay-zone and 500 feet south of the anticline, the Eureka lead has been worked 500 feet in length and 210 feet deep.

Between the Eureka and the Hattie-Mitchell workings there is a length of 2,250 feet of promising ground along the pay-zone, which being covered with drift, is wholly undeveloped, but should also be prospected. Rich float has been found along this zone on area 11, block I, on the Old Provincial Mining company's property, which should be traced to its source.

A rich pay-chute pitching east was operated for 800 feet in length and 240 feet in depth on the Hattie-Mitchell belt, situated 1,000 feet to the south of the anticline ; and, 150 feet farther south, the De Barres, or middle belt, was worked 800 feet in length and 80 feet in depth.

Faults.

The measures have been much disturbed in this vicinity by a series of faults radiating towards the south and south-east and crossing the Major Norton, Creighton, Hog, Halliday, Hattie-Mitchell, De Barres, Washington, Air-shaft, Plough and Caledonia leads. All these leads have been proved to be auriferous and worked more or less along a zone extending also towards the south. This zone of pay-veins and the faults have probably been caused by stresses developed towards the south by the meeting of the north anticlinal and synclinal folds.

Middle pay-zone.

Plough lead.

The heaviest fault has been well determined by Mr. Matthew McGrath's development works on the Plough lead belt, showing a horizontal throw of 130 feet to the north and a down-throw of 57 feet, on the east side.

A pay-chute of quartz, 18 feet wide, pitching east 16°, has been extensively worked and developed on the Plough lead belt across three properties for a length of 1,150 feet and a maximum depth of 352 feet. The chute is formed by numerous quartz anglers of fissures dipping south into the Plough lead belt.

Western pay-zone.

These anglers appear to extend to the south-east and north-west across the formation and constitute a zone of special enrichment on the Moore, Caledonia, Plough, Wiscassett, Washington, McKenzie, Gillis and Mundic leads which have been more or less worked. All the pay-chutes on this zone pitch eastward.

Caledonia lead.

A very rich and regular pay-chute pitching east 26° has been worked on the Caledonia lead for 500 feet in length and 175 feet in depth, to a small fault, beyond which it has not yet been found.

Moore lead.

The Moore lead has also proved rich and has been worked 400 feet in length, and 190 feet in depth. It is cut at the western end of the works by a left hand fault running north-east. Several very large belts of

quartz of low grade have been developed to the south of the Moore lead, and rich float has been found immediately north of it.

The Wiscassett and Washington belts have been worked, respectively, 375 and 250 feet in length and 65 and 75 feet in depth.

Mines in operation.

Three companies were operating in the district last summer. The Plough Lead Mining company were successfully working the Plough lead at the depth of 180 feet. The Old Provincial Mining company has completed a shaft 352 feet deep on the Plough lead, and is preparing to develop the pay-chute cut at that depth. L. W. Getchell & Co. were operating the large belts of quartz lying immediately south of the Moore lead, on the Napier Gold Mining company's property. Some development works were also being done on the Barachois, Eureka and Stuart properties.

Quartz-mills.

There are at present six quartz mills erected in the district: the Plough Lead Mining company's mill—15 stamps; the Old Provincial Mining company's mill—10 stamps; the Napier Gold Mining company's mill—10 stamps; the Eureka mine's mill—10 stamps; the Barachois mine's mill—10 stamps; and Dr. Eames' Crusher and roasting furnaces to extract gold and arsenic from arsenical-pyritous ores.

The total production of the Wine Harbour gold-district, from 1862 to 1901 inclusive, was 35,422 ounces of gold, from 55,335 tons of ore crushed, valued at $673,031, giving an average yield of $12.16 per ton of 2,000 lbs. In 1901, 29,664 tons crushed yielded 5,592 oz. 10 dwts. of gold.

Harrigan Cove Gold District.

Harrigan Cove Gold District.

One week was devoted to a survey of the gold district of Harrigan Cove, situated in the county of Halifax, on the Atlantic coast, at a distance from Halifax of 75 miles by water and 100 miles by the coach road. Most of the surveys have been plotted, on the scale of 400 feet to an inch, and the plan will soon be completed for publication. Meanwhile a preliminary description may be given of the general structure of the folds and veins.

A good section of the rocks is well exposed across the district along the area line dividing lot 215 from 216 on the St. Anthony property. It shows that the series have been plicated into one main anticlinal fold, on the south limb of which a subordinate crumple occurs at a distance of 1,250 feet to the south of the axis.

The main anticline was located on area 616, block 2, along a small swampy brook running eastward, at a distance of 2,000 feet north of the St. Anthony lead. The fold is broad; the angle of dip increasing gradually on both limbs until it reaches 90° half a mile north of the axis and 40° at a distance of 800 feet to the south of it. North anticline.

A few veins have been uncovered on both limbs, at some distance to the north and south of the axis, but none have yet been proved sufficiently auriferous to warrant developments, although some gold float is reported to have been found in the vicinity.

At a distance of 1,250 feet south of the main anticline the strata curve into a synclinal and, 150 feet further, into an anticlinal fold. The two folds converge towards the east and meet on area 390, beyond which the crumple terminates.

The south anticline runs N. 75½° W. and shows prominently 600 feet north of the St. Anthony lead, along a bold ridge for 1,600 feet, beyond which it is concealed by a hill of boulder clay running transversely north and south. On the north limb the strata dip 35°, while on the south the angle of dip increases gradually and reaches 60° at a distance of 1,500 feet south of the axis. South anticline.

Two left-hand faults were determined crossing the anticline: one, the St. Anthony fault, occurs on the eastern part of area 319, runs S. 25° W. across the auriferous belts, giving a displacement of 90 feet on the anticline; the other passes on area 278, where the throw is 50 feet south, runs southerly and probably meets the former fault between the St. Anthony and the A. Kent Archibald works. Several important faults undoubtedly occur to the westward, but they have not been made out yet. These faults should be kept in mind in the prosecution of surface developments and determined if possible. Faults.

All the veins discovered in the district, follow the planes of stratification and occur on the south limb of the south anticline. The area under development, and including all the veins operated, extends from the south anticline 1,600 feet southward across the stratification and and 2,800 feet east and west along the veins. Auriferous area.

Several large superimposed saddle-veins have been uncovered along the apex of the fold pitching westward at a very low angle. On the north dip they pinch out immediately north of the axis, but on the south limb they extend to a great depth, as is well proved at the surface by the cropping out of a succession of veins extending for a great distance to the south of the axis, the upper portions of which were denuded away to the present surface level. Large undeveloped veins

Some very rich float has been found south of the anticline and twelve large belts of quartz veins have recently been cut in the 600 feet of the strata between the anticline and the St. Anthony lead, most of which are well mineralized and show gold. None of them have, however, been cut yet in more than one or two places along their course, and they offer a very promising undeveloped field for the prospector.

St. Anthony mine.

The St. Anthony lead has proved so far the best producing vein of the district. A rich pay-chute pitching westerly has been worked 200 feet in depth and 500 feet in length to the St. Anthony fault, beyond which it has not yet been recovered. The throw here is to the south and probably less than the 90 feet of displacement measured on the anticline, and there should be no difficulty in finding the lead on the west side of the fault. The St. Anthony lead has been traced 1,600 feet in length east of the fault.

South of the St. Anthony lead the ground is low, swampy and wholly undeveloped.

A. Kent Archibald mine.

A great deal of development work has recently been done on the A. Kent Archibald property, situated to the west of the St. Anthony property, and over twenty-five belts of veins have already been uncovered, 300 feet south of the anticline, across 550 feet of strata. Several of the veins, well mineralized and auriferous, have been mined to limited depths. Pay-streaks or rolls pitching westerly occur in a line or zone running north-west and south-east, along which developments should be directed. One of the leads discovered last summer is especially rich in coarse gold, and the debris found along its outcropping showed very fine crystals of gold, in cubes, several of which were secured for the museum through the kindness of Mr. Monroe Archibald. They are the only crystals of gold discovered in Nova Scotia of which I am aware.

Between 400 and 600 feet farther south two large belts of leads have been mined a little on the McMann property.

Port Dufferin belt.

Some gold-bearing drift has also been found and a few veins lately prospected as far west as Port Dufferin, where this anticline crosses the Salmon river 1,300 feet above the bridge. A crumple of the strata apparently occurs a short distance below the bridge.

Moosehead mine.

East of the St. Anthony mine the country is generally covered with drift. At Moosehead, three miles east of Harrigan cove, some development work has been done from time to time on a few veins lying immediately south of the anticline.

In conclusion, it may be said that the very large field of undeveloped auriferous belts here present should draw the attention of the prospector, and that the A. Kent Archibald, St. Anthony and other adjacent properties, already proved productive, are capable of being operated on a much larger scale. It is believed that the plan which has been made will greatly assist in such developments. Conclusions.

Three mills are erected in the district, viz.: St. Anthony Gold Mining Co.'s mill, 10 stamps; A. Kent Archibald, *et al*, 5 stamps; M. McMann and others, 5 stamps. Quartz-mills.

The gold returns reported from Harrigan cove to the Provincial department of mines, Halifax, for the year 1901, were 4,167 tons crushed, yielding 2,595 ozs. 6 dwts. 9 grs., or an average of 12 dwt. 11 grs. per ton of 2,000 lbs. The returns just received from the provincial Commissioner of Mines for the year 1902 are:— Gold production.

St. Anthony Gold Mining Co.	1,183	tons yielded	493 ozs.
A. Kent Archibald, *et al*	1,095	"	750 ozs.
M. McMann and others	124	"	34 ozs.
Total	2,402	"	1,277 ozs.

Beaver Dam Gold District.

A hurried survey was made of the structure of the gold district of Beaver Dam, situated on the Killag branch of the West river of Sheet Harbour, 7 miles east of the coach road, in Halifax county. A full description of the district will, however, have to be deferred until the surveys are plotted. Beaver Dam Gold District.

All the veins discovered follow the planes of stratification along an anticlinal fold. No mining operations of any importance has yet been undertaken. A large belt of low grade ore has been developed by a shaft and cross-cut on the Jos. H. Austen, *et al*, property at the east end of the district. In a report submitted to the owners Mr. L. F. S. Holland gives the following measurements:—Shaft 98 feet deep on a belt 15 feet wide, cross-cut north 62 feet, cross-cut south 39 feet, total width of the auriferous belt 74 feet, half of which is quartz and slate giving an average value by sampling of $3.50 per ton. This belt has been uncovered 400 feet further west. Jos. H. Austin mine.

Three-quarters of a mile further west some very rich drift was found on the Geo. E. Van Buskirk and other adjoining areas, and a great number of leads, some of which are auriferous, have recently been un- Dimock and Zwicker's prospecting.

covered by Dimock and Zwicker by surface trenches cut across 785 feet of strata. The country is low, all covered with drift, and hence difficult to prospect.

The developments, though limited, have shown auriferous veins over a large area along the anticlinal fold, some of which are rich in gold and others form large deposits of low grade ore which deserve more attention than they have hitherto received.

A 10-stamp mill has been erected on the Jos. H. Austen property, and a good water-power is available on the Killag river within a short distance of the mine.

Gold Districts Examined.

A hurried examination and partial surveys were also made of recent mining developments in the gold districts of Richardson, Doliver Mountain, Goldenville, and County Harbour Narrows, in Guysborough county; of Ecum Secum, Dufferin, Fifteen-mile Stream, Caribou, Moose River, Mooseland, Tangier and Waverley, in Halifax county; of Renfrew and Mount Uniacke in Hants county, and Gold River and Leipsigate in Lunenburg county.

Deep Gold Mining.

Possibility of deep mining demonstrated by geological work.

The knowledge now gained, by a detailed study of the principal gold districts in the province, proves conclusively that the auriferous veins outcropping at the surface on the north and south limbs of the anticlinal folds are the remnants of the north and south legs of the superimposed 'saddle-veins' which once occurred at a higher level than the present surface, and demonstrates that, below, auriferous saddle-veins will be found recurring along the axis-plane of the fold. Moreover, from the analogy of the Australian gold-bearing 'saddle-reefs,' occurring in a similar manner and profitably operated to a depth of 4,000 feet, it may be inferred that the quartz veins in Nova Scotia will, in depth, be as large and as rich in gold as those outcropping at the surface.

Deep mining proved by actual practice.

It is difficult, however, to induce capitalists to invest money in extensive mining developments unless similar undertakings have already proved successful in actual practice. It is, therefore, very gratifying for me to state that the recommendations of the Geological Survey have already been put into practice at the Bluenose, Dufferin, Richardson, Doliver Mountain and other mines, and, although the developments are as yet limited, the results obtained are so satisfactory and

conclusive that they are attracting the attention of foreign engineers and capitalists and similar developments are being contemplated at other mines.

Economic value of geological work in Nova Scotia.

Mr. C. K. Leith, of the United States Geological Survey, and professor at the University of Wisconsin, reviewing the work of the Geological Survey of Canada in the gold-fields of Nova Scotia, says* : 'Mr. E. R. Faribault's work will be of immediate practical advantage to mining men, some of whom have already testified to its accuracy and value. It is another instance, lately of frequent occurrence, of geological work done from a purely scientific standpoint having direct economic value. From a scientific standpoint, also, the results are of interest as illustrating a principle of ore disposition. In many districts, and particularly in the Lake Superior district, it has long been known that ore deposits were partial concentrates in pitching troughs by descending waters. Van Hise has lately enunciated the principle that the openings in arches or pitching folds are favourable places for the concentration of ore deposits by *upward moving waters*. The formation of the gold-bearing veins of Nova Scotia seems likely to have occurred in this way.'

Bluenose mine Goldenville.

Bluenose Mine, Goldenville.—Much credit is due to the late Mr. Simon A. Fraser for having first undertaken, and Messrs. Thos. Cantley and A. G. McNaughton for having executed so successfully at the Bluenose mine a new system of mining development on the Goldenville anticlinal fold, which should be an object lesson for the gold miners of the province, as it will, no doubt, be the inauguration of a new era of extensive and permanent deep mining.

Transverse section.

A detailed survey was made on October 15 last of the new developments and a transverse section was prepared which is here reproduced on a reduced scale. The section is made through the main shaft on the Springfield belt, and along two cross-cuts driven north, one above the other, at the depths of 280 and 364 feet, and at a distance of 30 feet west of the main shaft. The upper cross-cut is 230 feet and the lower 250 feet long. They show the structure of the Goldenville anticlinal fold with a subordinate small flexure on the north leg, and disclose the recurrence of large auriferous saddle-veins, from the surface to below 364 feet.

Recurrence of workable saddle-veins.

The saddle-veins are remarkably well developed on the apex of the fold where they attain a large size, and the legs continue downwards

* The Journal of Geology, Jan.-Feb., 1900, vol. VIII, No. 1, page 84.

very regularly on both legs, the veins diminishing but little in size, more especially on the south leg, which goes to prove that they will extend to great depth, as well as parallel with the anticlinal axis.

Most of the veins developed have proved auriferous, and two of them, the McNaughton belt on the south dip and Cantley belt on the north dip, have already been profitably worked.

McNaughton belt.

The McNaughton belt measures 6 feet 8 inches in width at the upper level and 6 feet at the lower, and is composed of large irregular quartz rolls and stringers pitching westerly 15 degrees to 22 degrees in slate and a few thin layers of whin. It has been opened 300 feet in length on the upper level and 500 feet on the lower, and the greater part of the block of ore between the two levels has been extracted by backstoping. A rise of 65 feet has been made above the upper level, where the belt has widened to eight feet and ten inches and begins to curve towards a saddle higher up. The official returns of the ore extracted from the McNaughton belt for the year 1902 are 11,211 tons, yielding 2,391 ozs. of gold, which is very satisfactory considering the size of the vein.

Springfield belt.

The Springfield belt was profitably worked to a maximum depth of 400 and a length of 900 feet, and is still found auriferous at the bottom of the main shaft, which is being sunk some 50 feet deeper for a third cross-cut, to develop new saddles and backstope the McNaughton and probably other workable belts already cut. The South Springfield belt was mined 113 feet in depth and 242 feet in length.

Pay-zone on south dip.

As the McNaughton belt has been profitably mined almost to the apex of the fold, 145 feet above the lower level, we may conclude that the denuded portion of the Springfield belt, about 150 feet, was pay-ore, which added to the depth worked, 400 feet, would give a possible total depth of 550 feet of pay-ore on the south dipping veins. The McNaughton belt may, therefore, be expected to carry pay-ore for 400 feet deeper than the 364 feet level. On the south dip the zone of pay-veins is thus approximately 150 feet in width and lies immediately south of the anticlinal axis, along which it extends to great depth, unless a change should be found in the structure of the fold, of which there is so far no indication. In length the Springfield belt has been profitably worked for 900 feet, and the McNaughton belt will probably be workable for the same length.

A continuous zone of pay-veins has been worked to limited depths, all along the south limb of the Goldenville anticlinal fold, for an aggregate length of 4,400 feet, from the Springfield to the Palmerston belt,

beyond which development work has been prevented by the swampy nature of the ground. The surface developments are sufficient to prove that this zone affords a field of virgin ground, large enough for several mines like that operated by the Bluenose company, and Mr. George W. Stuart is at present sinking a shaft on area 743, seventy-five feet west of the open-cut on the Palmerston belt, in order to develop the zone of pay-veins, which has proved very rich in gold in this vicinity, by a system of cross-cuts and drifts at different levels.

Pay-zone on north dip.

The developments on the north dip at the Bluenose mine, have not yet been sufficient to determine the pay-zone, but on the Cantley belt they show that the workable portions of the veins are restricted to certain parts of the subordinate flexure occuring on the north limb of the main anticline, and further developments will no doubt determine some well-defined zones of pay-chutes pitching, like the flexure, easterly 20 degrees.

The most regular and continuous pay-chutes worked in Goldenville were operated on the north limb of the anticline. In the plan and report of that district, published in 1897, three zones of pay-chutes are given: the Wellington, Hayden and McRae lines of pay-chutes. In the Summary Report for the same year, page 109, referring to the Hayden line of pay-chutes, I said, 'A swamp lying north-west of the Little Hayden has, no doubt, prevented prospecting further north-west on this undulation, but there is every reason to believe that rich streaks occur there.' It is gratifying to learn that this prediction has been fulfilled and that several rich pay-chutes have since been developed with a great deal of skill by Mr. Wm. McIntosh, the superintendent of the Royal Oak mine, and for the year 1902, 4,310 tons of ore extracted have yielded 2,394 ozs. 16 dwts. of gold.

Royal Oak mine.

Salmon River Gold District—Dufferin Mine.

Saddle-veins developed by vertical shaft and cross-cuts.

A general description of the mining developments on the arch-core of the anticlinal fold at the Dufferin mine, has already been given in the Summary Report for 1899, page 183, and a transverse section showing the structure of the saddle-veins is now ready for publication.

This section shows that a vertical shaft 420 feet deep with cross-cuts through the anticlinal fold at 134, 200, 315 and 420 feet levels have developed a succession of superimposed saddle-veins, which do not crop at the surface, five of which have been worked between the surface and the 315 feet level.

This mine has been one of the best gold producers in the province: 117,906 tons of ore treated having yielded 41,497 ozs. 5 dwts. 20 grs.

of gold valued at $788,448, giving an average of 5 dwts. 20 grs. per ton of 2,000 lbs. Through one cause or another, the mine is at present idle, but will undoubtedly be taken in charge again by some skilful mining engineer and operated as successfully as before, which has been the case with several other abandoned mines lately reopened.

Upper Isaacs Harbour Gold District.

Upper Issacs Harbour.

A special plan of this district, also called Upper Seal Harbour, was made in 1897 and descriptive notes were published in the Summary Report for that year, in which it was pointed out, at page 106, that 'Large belts of low-grade ore, conforming with and similar to that of the Richardson vein, certainly occur along this fold, but they will only be found on the apex of the fold, along which more prospecting should be done; and this could be accomplished most readily and at least cost by sinking vertical shafts along its axis.' This recommendation has since been successfully put into practice at the Richardson and Doliver Mountain mines.

Richardson mine saddle-veins.

Richardson Mine.—At the Richardson mine a vertical shaft was sunk 160 feet in depth, about 900 feet to the eastward of the Richardson vein, intersecting at the depth of about 100 feet the south leg of an overlying saddle-vein giving ten feet of quartz and slate, which was developed by a drift 60 feet eastward and a cross-cut 84 feet long to the north leg which shows six feet of ore. The character of the ore and structure of the saddle-vein are identical with those of the Richardson; but for some cause, the work of sinking has been stopped. The property, however, has been acquired by a strong American company which contemplates important mining developments, by means of a vertical shaft and cross-cuts and with up-to-date equipment; and alterations are already in progress. The large cyanide plant lately erected is to be utilized for a new process of gold extraction, and the 60-stamp mill improved and twenty more stamps added. The production to date from this district shows 73,314 ounces of gold from 226,355 tons of ore treated.

Vertical shaft intersects large saddle-veins.

Doliver Mountain Mine.—At Doliver mountain, on the same anticline and one mile west of the Richardson mine, Mr. G. J. Partington has, during the last two years, developed in a very skilful manner a succession of large saddle-veins similar to the Richardson. The exact position and direction of the anticline and the structure and value of three superimposed saddle-veins outcropping at the surface were first ascertained. These are the Howard, Forge and Partington saddle-veins, measuring respectively 10, 30 and 33 feet vertically on the apex,

the former pitching eastward 12° and the latter 16°. A vertical shaft, 17 ft. 6 in. x 5 ft. 3 in., was then sunk on the anticline, on area 774, about 400 eastward of the cropping of the Partington belt, to intersect the three saddle-veins as well as others underlying at their apex. After going through 55 feet of quicksand, small veins were intersected at depths of 55, 92 and 102 feet, which, although not apparently of workable size, proved the shaft to be exactly on the apex of the fold.

At the depth of 130 feet the Partington belt was intersected. It is being developed on the north and south legs and has yielded about 6,000 tons of ore, highly mineralized, composed of rolls, bunches and stringers of quartz running through a belt of slate and much resembling that of the Richardson mine. Below the Partington saddle-vein the shaft cut through a very hard bed of quartzose-sandstone or whin, 29 feet thick, then at the dept of 192 feet another saddle, was intersected 22 feet thick, well mineralized and composed of two distinct corrugated lodes and a network of irregular feeders of quartz running through the slate belt. The shaft is now 190 feet deep, but the company will wisely continue the sinking without interruption until the depth of 1,000 feet has been reached. It will thus intersect successively the Forge and Howard belts, already uncovered at the surface, and, no doubt, other new underlying saddle-veins, on the apex of the fold, where they are of greater size and value.

Large water-power plant and mill.

These operations are well worth recording, as the first instance in Nova Scotia where a series of saddle-veins has been systematically developed with due regard to its geological structure and a proper knowldege of its possibilities for extensive and permanent mining. The company is erecting a large, modern plant. A fine water-power is being utilized at the head of tide on Isaacs Harbour river, capable of generating 750 horse power. The power is transmitted by electricity to the mine, where an electrical host and fifteen-drill air compressor have been installed, and an eighty-stamp mill in which 40 stamps are to be used at once.

Model plant.

This is certainly one of the best equiped mines to operate large bodies of low-grade ore at a low cost, and it only requires a good plant for the extraction of gold from the sulphides to make it the model gold mine of the province. What has been accomplished at this mine can also be done at several points along the Upper Isaacs Harbour anticlinal fold and in many other districts where the conditions are favourable, particularly Isaacs Harbour, Goldenville, Salmon River, Mooseland, Tangier, Oldham, Waverley, Fifteen-mile Stream, Renfrew, etc.

Methods of Deep Gold Mining.

Deep mining at Bendigo.

At Bendigo, Australia, the systems of saddle-reefs are being developed in depth by means of vertical shafts sunk on the anticlines, and a succession of cross-cuts and drifts at about every hundred feet. It is, therefore, very desirable that the vast experience gained in that field should be taken advantage of by those contemplating the development of our Nova Scotia systems of saddle-veins. Much practical information may be obtained from the official reports of the Victoria department of mines at Melbourne, and other literature published on the subject in the transactions of the Australian mining and scientific societies.

Location of vertical shafts.

The success of deep mining depends above all on the proper location of the vertical shafts, and this can only be done after a careful study of the structure and conditions peculiar to each district. Some districts are especially suitable for such developments, while others are not, although they may have proved good gold producers over a large area. Second in importance to the location of the shafts, is the direction and length of the cross-cuts and drifts to intersect the pay-veins.

Vertical and inclined folds.

In the case of anticlinal folds, where axis-plane is vertical, like that of Upper Isaacs Harbour, Mooseland, Tangier, Dufferin and Oldham, a vertical shaft would run parallel with it; but if the axis-plane dips at an angle from the vertical, as at Goldenville, Fifteen-mile Stream, Waverley and Renfrew, the vertical shaft would necessarily approach or recede from the axis as it is sank to greater depth, according to its position with reference to the axis. In the first case, very little cross-cutting would be necessary, if the shaft is properly located as it would keep in the pay-zone all the way down; but in the latter case, the deeper the shaft the more cross-cutting will have to be done. The dip of the anticlinal axis has thus to be taken into consideration in locating a vertical shaft, so that unnecessary cross-cutting may be avoided.

Testing of the veins.

The veins intersected should be carefully sampled and separate mill-tests made of the most promising, to determine the workable portions and pay-chutes. It is very desirable that the structure of the strata and veins intersected should be recorded on a large scale plan, before it is concealed by the timbering of the shaft. A complete set of underground plans and sections should also be kept of cross-cuts, drifts, winzes, rises, etc., showing the value, size and structure of the veins opened up. Such plans would show the distribution of the ore-bodies in the area developed and assist in defining the direction and extent of the pay-zone and in laying out the development works.

Advantage should be taken of the fine water-powers which are lying idle in close proximity to most of our mines, now that gold mining is being established in the province on a more permanent footing, as they would greatly lessen the cost of operation. The transmission of power by compressed air for short distances and by electricity for longer distances has proved to be practicable and is extensively and successfully used outside of the province. Water-powers.

Chemistry and Mineralogy.

Dr. G. C. Hoffmann.

Reporting on the work done in these branches of the Survey's operations, Dr. Hoffmann says:—'The work carried out in the chemical laboratory during the past year' has been, in pursuance of the practice of former years, almost exclusively confined to the examination of such minerals, ores, etc., as were considered likely to prove of more or less economic value and importance. Briefly summarized this work included: Summary of analyses made.

'1. Analyses of fuels, namely—of peat, from the thirty-fourth lot of the sixth concession of the township of Lancaster, Glengarry county, province of Ontario; and from a point some sixty-seven miles up from the mouth of the Kwataboahegan, a tributary of the Moose, in the same province. Of lignite, from Lepine creek, a stream flowing into Rock creek—which is a tributary of the Klondike, Yukon territory. Of lignitic coal, from near the head of Kettle river, Yale district, in the province of British Columbia. Of coal, said to occur near White Horse, Yukon territory; and from near the head of Kettle river, Yale district, in the province of British Columbia. Of semi-anthracite, from near Blairmore, district of Alberta, and of anthracite, stated to have come from near White Horse, Yukon territory. Mineral fuels.

'2. Analyses, more or less partial, of iron ores from, among other localities,—The farm of John Hatley, Cleveland, Annapolis county, and from Georges river, Cape Breton county, in the Province of Nova Scotia. The first lot of the eighth range of the township of Wolfstown, county of Wolfe; and from Chicoutimi county, in the province of Quebec. The fifteenth lot of the fifth concession of the township of Oso, Frontenac county: the thirty-first lot of the twelfth concession of Grattan, Renfrew county; from near Flying Post, Mattagami river, district of Algoma; and from south of Waboose lake, same district, in the province of Ontario. From a deposit on Sutton Mill lake, west side of Iron ores.

James Bay, near Cape Henrietta Maria, in the district of Keewatin; and from Port Kells, on the south side of the Fraser, district of New Westminster, in the province of British Columbia.

Nickel ores.

'3. Analyses, in regard to nickel content, of pyrrhotite from the following localities:—In the province of Ontario, from the seventeenth lot of the second concession of the township of Westmeath, in Renfrew county; the tenth lot of the fourth concession of the township of Olden, in Frontenac county; from a cutting on the Whitney and Opeongo Railway, about seven miles and a quarter from its junction with the Canada Atlantic Railway, township of Sproule, in the Nipissing district; from the eighth lot of the fourth concession of the township of Dowling, and from the fourth lot of the fourth concession of the township of Graham, both in the district of Algoma. In the province of British Columbia, from a mountain on the west side of Ice river, about six miles from the forks of Ice and Beaverfoot rivers, in the East Kootenay district; the north bank of the Thompson, about five miles above Lytton, as likewise from Shuswap lake, in Yale district. Analyses were also made of specimens of this mineral from the fourteenth lot of the fifth range of the township of Masham, Ottawa county, in the province of Quebec; and from about a quarter of a mile north of Boularderie Centre, Victoria county, in the province of Nova Scotia.

Gold and silver.

'4. Assays of numerous samples of material for gold and silver from localities in the provinces of Quebec and Ontario; the district of Keewatin; the Yukon territory; the districts of East and West Kootenay, Yale, Lillooet, Cassiar, New Westminster, and from Vancouver island, in the province of British Columbia.

Limestone and dolomite.

'5 Analyses, complete or partial, of limestones and dolomites (in continuation of the series of analyses of such stones already carried out, in connection with an inquiry into their individual merits for structural purposes, for the manufacture of lime, or of hydraulic cement, or for metallurgical purposes, etc.), including, that of a dolomite from Brookville, St. John county, province of New Brunswick; of limestone from the Archambault quarry, on the twenty-sixth lot of the seventh range of the township of Weedon, Wolfe county, province of Quebec; of a limestone from a quarry on the thirty-fourth lot of concession A of Ottawa Front, township of Nepean, Carleton county; and of a dolomite from Walkerton, Bruce county, in the province of Ontario.

Natural waters.

'6. Analyses of natural waters—with the object of ascertaining their suitability for economic or technical purposes, or possible value

from a medicinal point of view—from the undermentioned localities:—From a spring on lot 1 of the 1st concesssion of the township of Scarborough, York county, and from a well in the village of St. Joseph, Huron county, in the province of Ontario; from a spring about four miles back from the west bank of the Fraser, nearly opposite the mouth of Big Bar creek, Lillooet district, and from a spring at Chilcotin, about twenty-three miles from Chimney creek ferry, Cariboo district, in the province of British Columbia.

Numerous minerals of economic value.

'7. Analyses of several minerals of economic value, some of which had not previously been recognized as occurring in Canada, and of others, from localities where they were not previously known to occur, as for instance: 1. Of chrompicotite, a variety of chromite, or chromic iron, which has been met with in considerable quantity on Scottie creek, some seven miles east of Mundorff, in the district of Lillooet, province of British Columbia. This mineral had hitherto been found in but one locality, namely, at Dun Mountain, in New Zealand. The find may prove to be of considerable commercial value, as a source of chromium, which is used, among other purposes, in the manufacture of bichromate of potash, a preparation employed for calico-printing and in certain forms of electric batteries and for other purposes; as likewise for the preparation of the pigments chrome-yellow, orange and green, and also to some extent in the production of what is known as chrome-steel. 2. Of native antimony, which has been found at the Dufferin mine, on the 18th lot of the 1st concession of the township of Madoc, Hastings county, in the province of Ontario. 3. Of a series of specimens of what, as a result of this examination, has now been shown to be magnesite with variable, often comparatively small, quantities of intermixed dolomite, from more or less extensive exposures, and drift boulders, of the same, occurring in the township of Grenville, Argenteuil county, in the province of Quebec. The economic importance of this occurrence, may be inferred from the fact that magnesite is used in the preparation of magnesian salts—such as Epsom salts, magnesia, etc., also in the manufacture of paint, paper, and fire-brick, for which last named purpose it is especially well adapted, particularly where a highly refractive material is needed, as in the so-called basic process of iron-smelting. 4. Of an altered felsite from within half a mile of the stage stables at Hay cove, Red islands, Richmond county, in the province of Nova Scotia, where, from the information received, it is inferred that it occurs in considerable quantity. From experiments made with this material in the laboratory it is considered that it would make a fairly refractory fire-brick, in which regard it resembles the altered felsite from Watson

brook, Cape Breton county, in the same province, the results of the examination of which, by the writer, are given in the Report of Progress of this Survey for 1875–76, p. 423. 5. An analysis of the somewhat rare mineral faujasite, a species not previously recognized as occurring in Canada, which was found, as described in my last report (Annual Report of this Survey, vol. 12, p. 17R, 1899), associated with the datolite met with in the workings of the Daisy mica mine, on the 9th lot of the 1st range of the township of Derry, Ottawa county, in the province of Quebec. 6. An analysis of a very beautiful amphibole from the township of Grenville, Argenteuil county, province of Quebec, which would appear to be adapted for an ornamental stone or for use in jewellery. 7. An analysis of a sample of underclay from a seam of lignite on Rock creek, about nine miles up from its entry into the Klondike, Yukon territory. This clay, the chemical composition and physical characters of which proved to be somewhat exceptional, was found to possess the property of decolorizing mineral oil, in which regard it resembles a fuller's earth. Examinations have also been made of many minerals from localities where they had not hitherto been met with, namely, of lampadite, or cupreous manganese, from the King Solomon mine, Copper camp, at the head of Copper creek, Yale district, in the province of British Columbia: of native copper, also from the King Solomon mine: of tremolite, from the Morrison mine, Deadwood camp, some three or four miles north-west of Greenwood city, Yale district, province of British Columbia: of rutile, from a quartz vein on Thistle creek, a tributary of the Yukon, Yukon territory: of bismuthinite, from the Blue Bell claim, Summit camp, near the head of Fisherman creek, Yale district, province of British Columbia: of melaconite, malachite, azurite, and cuprite, all from the King Solomon mine, Copper camp, at the head of Copper creek, Yale district, province of British Columbia: and of an asbestiform actinolite from a point on the Klondike about a mile and a half from its entry into the Yukon, Yukon territory.

Rare minerals.

'8. Miscellaneous examinations, embracing: The examination of samples of clay in regard to their suitability for the manufacture of bricks, ordinary building bricks and fire-bricks, sewer-pipe, terra-cotta, stoneware, etc., from Marble mountain, Inverness county, province of Nova Scotia; Summer hill, parish of Gagetown Queens' county, and from the left bank of the Miramichi, about eighteen miles from its entrance into Miramichi bay, Northumberland county, in the province of New Brunswick; from the mouth of Savage river, a tributary of the Patapedia, Bonaventure county, from the four hundred and fifty-ninth lot

Examinations of clays.

of the first range north-east, on the Chaudière, seigniory of St. Joseph, Beauce county, and from the fourteenth lot of the first range of the township of Wakefield, Ottawa county, in the province of Quebec; from the thirty-fourth lot of the sixth concession of the township of Lancaster, Glengarry county, and from the ninth lot of the eleventh concession of the township of Greenock, Bruce county, in the province of Ontario; from one mile west of the junction of the South fork and Little South fork of the Old Man river, district of Alberta, and from the Red Deer river, in the same district, as likewise from the vicinity of Moosomin, district of Assiniboia, in the North-west Territory; from Arrow lake, West Kootenay district, and from Texada island, Strait of Georgia, in the province of British Columbia.

Of Sands.

The examination of a series of samples of the sand forming the Traverse Spit, at the foot of the Island of Orleans, and of that forming the Ste. Croix and Champlain shoals, between Three Rivers and Quebec, in the lower St. Lawrence, province of Quebec; of a siliceous sand from about two miles from the town of Shelbourne, Shelbourne county, province of Nova Scotia; of a sand from the bottom of a small lake on the eleventh lot of the tenth concession of the township of Greenock, Bruce county, in the province of Ontario; of an auriferous black sand from Adams hill, near Bonanza creek, and of a black sand from White Horse, Lewes river, Yukon territory.

Of marls.

The examination of a marl from the fourteenth lot of the first range of the township of Wakefield, Ottawa county, and of that of another from the eleventh lot of the tenth range of the township of Bristol, Pontiac county, in the province of Quebec, as likewise of that of one from Loughborough lake, in Frontenac county, and of another from Odessa lake, Lennox county, in the province of Ontario. The examination of some silts from the township of Greenock, Bruce county, province of Ontario. The examination of an ore of manganese from Soldier cove, Bras d'Or lake, Richmond county, province of Nova Scotia; of a concretionary nodule from the vicinity of Sorel, south shore of the St. Lawrence, province of Quebec; of calcareous shales from Arnold, province of Manitoba; of a carbonaceous shale from Harris brook, Victoria county, province of Nova Scotia; of a bituminous shale from Chambord, township of Metabetchouan, Chicoutimi county, province of Quebec; of a sample of copper ore from Field, East Kootenay district, province of British Columbia; of a disseminated graphite from the ninth lot of the tenth concession of the township of Ross, Renfrew county, province of Ontario, and of another from Rivers inlet, in the province of British Columbia, as likewise of a prepared graphite from

Of shales.

the works of the Dominion of Canada Plumbago Company, township of Buckingham, Ottawa county, province of Quebec; of an altered bitumen from the Falls on the Middle Fork of the Old Man river, district of Alberta, North-west Territory; of a sample of pyrite from the fourteenth lot of the fifth range of the township of Masham, Ottawa county, in the province of Quebec.

Various examinations.

Examinations were also made of a great variety of other material from various parts of the Dominion, much of which, including those above referred to, called for, at least, a partial analysis.

'The total number of mineral specimens received for identification, analysis, or the obtaining of information in regard to their possible economic value during the past year, amounted to seven hundred and ninety-one (791). Many of these were brought by visitors, and the information sought in regard to them was in most cases communicated to them at the time of their calling. In other instances, however, such as those where a partial or complete analysis was considered desirable, as also in the case of specimens which had been sent from a distance, the results were communicated by letter. The number of letters personally written, in this connection,—chiefly of the nature of reports, and embodying the results of the examination, analysis, or assay, as the case might be, of mineral specimens—amounted to three hundred and twenty-one; and of those received, to one hundred and fifty-two.

Assistants in laboratory.

'Messrs. R. A. A. Johnston and F. G. Wait, assistants in the laboratory, have, as a result of the interest taken by them in their work, and their close and unremitting application to it, proved most efficient aids. Briefly stated, Mr. Johnston has carried out a large number of gold and silver assays, made many important mineral analyses, and, further, conducted a great variety of miscellaneous examinations; whilst Mr. Wait has made numerous analyses of natural waters, some mineral analyses, many partial analyses, and, in addition, also carried out very many miscellaneous examinations: all of which work will be given in detail in my ensuing annual report.

Assistant in mineral section.

'In the work connected with the mineralogical section of the museum, I have, as in previous years, had the hearty and able assistance of Mr. R. L. Broadbent. He has, in addition to the usual routine work of the museum—such as the labelling and cataloguing of all newly received specimens, and the maintenance of the collection generally in an orderly condition—also spent some time in the field for the purpose of collecting specimens for the museum, as well as others for

Mr. Willimott's use in making up collections for distribution to Canadian educational institutions. With this object in view, he visited several localities in the township of Hull, Ottawa county, of Grenville, Argenteuil county, and those of Litchfield and Calumet, Pontiac county, in the province of Quebec; and, further, the township of Ross, Renfrew county, and that of Lanark, Lanark county, in the province of Ontario. The minerals collected by him comprised :— Minerals collected.

	Specimens.	Weight.
Barite		200 pounds.
Fluorite (green)	13	
Porphyry		215 "
Scapolite	120	
Wollastonite	18	
Hornblende		100 "
Magnesite		150 "
Dolomite	200	
Zinc blende		300 "
Limestone (marble)		250 "
Galena	350	
Iron pyrites		300 "
Magnetite		350 "

'He has also devoted some time, to the preparation of a list of the additions to the mineralogical section of the museum during the last nine years. This, when completed, is intended to form an appendix to the "Catalogue of Section One of the Museum" (which embraces the systematic collection of minerals and the collection of economic minerals, etc.) published in 1893, thereby bringing it up to date.

The additions to the mineralogical and lithological section of the museum, during the past year, embraced :— Minerals added to museum.

(A.) Collected by members of the staff engaged in field-work in connection with the Survey :—

Ami, Dr. H. M.—

a. Mica (muscovite), garnet (almandite), felspar, graphic granite, garnetiferous gneiss, and hornblende, from Lac du Pied des Monts, Charlevoix county, Q.

b. Barite from lots 16 and 17, con. II of Kingston, Frontenac county, O.

Bell, Dr. R. :—

Zinc blende (sphalerite), from lots 5 and 6, con. III of Olden, Frontenac county, O.

Brock, R. W. :—

a. Cuprite, native copper, malachite, melaconite and lampadite, from the King Solomon mine, Copper Camp, Boundary creek district, B.C.

b. Bismuthinite, from Blue-bell claim, Summit camp, Boundary creek district, B.C.

c. Tremolite, from Morrison mine, Deadwood camp, Boundary creek district, B.C.

d. Calcite crystals from Knob Hill mine, Phœnix (Greenwood camp), Boundary creek district, B.C.

Dowling, D. B. :—

a. Magnetite from Sutton lake, west side of James bay, district of Keewatin.

b. Calcite from Equan river, district of Keewatin.

Leach, W. W. :—

Coal from the Coal creek, Michel and Morrissey mines, Crows Nest Coal Field, East Kootenay district, B.C.

McKinnon, A. T. :—

a. Gypsum from Clarks Head, Parrsboro', Cumberland county, N.S.

b. Amygda'oid from Two Islands, Cumberland county, N.S.

Wilson, A. W. G. :—

a. Hematite from south of Waboose lake, south-west of Lake Nipigon, district of Thunder bay, O.

b. Dolomite from north-east side of Narrows leading to Chiefs bay, Lake Nipigon, O.

(B.) Received as presentations—

Allan, W. A., Ottawa :—

Fluorite crystals from lot 1, range IX of Derry, Ottawa county, Q.

Ami, Dr. H. M., (Survey) :—

Fragment of the 'Welland' meteorite, Welland, O.

Brumell, H. P. H., Buckingham, Q. :—

Contorted band of quartz in limestone, from lot 28, range VI of Calumet island, Pontiac county, Q.

Chute, J. A., Dawson, Yukon Territory, per J. B. Tyrrell :—

Native gold (crystal) from claim No. 16, Gold Run creek, Dominion creek, Yukon Territory.

Davis, M. P., Ottawa, O., per Dr. H. M. Ami, (Survey) :—

Granite from quarry at Rivière à Pierre, Portneuf county, Q.

Diver, D. :—

Marl from lots 3 and 4, con XI of Egremont, Grey county, O.

Haycock, E. B., Ottawa, per Dr. A. E. Barlow, (Survey) :—

Corundum from lot 14, con. IX of Methuen, Peterborough county, O.

Henderson, C., Madoc, O., per A. Blue, Ottawa :—

Talc from lot 14, con. XIV of Huntingdon, Hastings county, O.

Hungerford-Pollen, C., Fort Steele, B.C., per W. W. Leach, (Survey) :—

Hematite (crystallized) from the Stella mine, near Fort Steele, East Kootenay, B.C.

Low, A. P., Ottawa, O. :—

Dolomite from Hopewell sound, East coast of Hudson bay, Ungava district, N.E.T.

McPhee, Donald, Scotch Road, P. O., Argenteuil Co., Q. :—

Hornblende from lot 15, range IX of Grenville, Argenteuil county, Q. :—

Matheson, P., per Dr. H. M. Ami, (Survey) :—

a. Chalcopyrite, pyrrhotite and galena from Calumet island, Pontiac county, Q.

b. Pyrrhotite from near Renfrew, Renfrew county, O.

c. Quartz with iron pyrites, in chloritic schist, from lot 7, con. VIII of Ross, Renfrew county, O.

Messrs Moberly and Cameron, Collingwood, O. :—

Marl from lots 25 and 26, con. VII and VIII of Flos, Simcoe county, O.

Mitchell, W. D., New Denver, B.C :—

Silver ores from mines and claims in the Slocan Mining area, West Kootenay, B.C.

a. Sphalerite with chalcopyrite and galena from the 'Fairy Queen,' southern slope of Ruby mountains.

b. Galena (so called ribbed ore) from the 'Convention Fraction,' Silver mountain, $3\frac{1}{2}$ m. N. E. of New Denver.

c. An association of galena and iron pyrites, in quartz, from the 'Snifi' group, Silver mountain.

d. An association of galena and iron pyrites, in quartz, from the 'Mountain Chief,' Silver mountain.

e. Galena (so called ribbed ore) from the 'Bosun & Fidelity,' Silver mountain.

f. A vesicular quartz carrying a little galena, from the 'Empress,' twelve miles east of Silverton.

g. Quartz carrying small quantities of galena, tetrahedrite, and pyrite, from the 'Mollie Hughes,' foot of Goat mountain.

h. Quartz carrying small quantities of tetrahedrite, from the 'Capella' group, Goat mountain, one-quarter mile east of New Denver.

i. An association of quartz and calcite carrying a little tetrahedrite and pyrite, from the 'Ceylon,' Goat mountain, north of the Capella group.

j. A honeycombed quartz, stained and coated with ferric hydrate, from the 'Queen City' group, one mile east of New Denver.

k. A massive, fine to coarse, crystalline galena, from the 'Eclipse,' Silver mountain.

l. Quartz carrying small quantities of galena, from the north-west slope of the Ruby mountains.

m. Molybdenite from Wilson creek, Slocan lake, West Kootenay district, B.C.

Nadeau, J. A., Iberville, Q., per Dr. H. M. Ami, (Survey):—

Granite from the Mount Johnson quarries, Iberville county, Q.

Osman, C. J., M.P.P., Hillsborough, N.B., per Dr. R. W. Ells, (Survey):—

Gypsum showing wavy markings, from Hillsborough, Albert county, N.B.

Tyrrell, J. B., Dawson, Y. T.:—

Cassiterite (wood tin) from claim 39 above Discovery, Hunker creek, Yukon territory.

Wood, Hon. Josiah, Sackville, N.B.:—

a. Copper ore from the Intercolonial Copper Company's mine, Dorchester, Westmoreland county, N.B.

b. Copper ore (ground).

c. " (roasted).

d. Copper solution.

e. Electrolytic copper.

Rock specimens acquired.

In addition to the foregoing, there have also been added to this section of the museum :—

258 specimens of rocks with microscopic sections, from the east side of Lake Winnipeg, collected by J. B. Tyrrell.

50 specimens of rocks with microscopic sections, from the Sudbury mining district, Ont., collected by Dr. R. Bell.

Educational collections.

Mr. C. W. Willimott was engaged during the early part of the year in making up collections of minerals and rocks for various educational institutions. Later on, in the month of July, he visited the township of Wakefield, Ottawa county, P.Q., on which occasion he collected the following material :—

Garnet (almandite)	200 specimens.
Scapolite	200 "
Diorite	200 "
Phlogopite	300 crystals.
Apatite crystals in calcite	150 specimens.
Pyroxene crystals	750 "
Serpentine	100 lbs.
Calcite	100 "

He received from

Mr. Allan McKinnon :—

Agate, about	300 lbs.
Fibrous gypsum, about	200 "

Mr. D. Farry, Ottawa :—

Shell marl	25 lbs.

Mr. Robertson, Albert mines, N.B.:—

Albertite	1 barrel.

Mr. Parks, Eganville, Ont.:—

Aventurine (feldspar)	40 lbs.

Collections sent.

The following is a list of the educational institutions to which named collections of minerals have been sent during the year :—

	Specimens.
St. Denis Academy, Montreal	75
Public school, W. Pubnico, Yarmouth county, N.S	75
Jacques Cartier Normal School, Montreal, Que	100
Les Sœurs de la Congregation de Notre Dame, Sherbrooke, Que	75
Public school, Warkworth, Northumberland co., N.B	100
Sacred Heart Academy, Montreal, Que	75
St. Urbain Academy, Montreal, Que	75
Public school, Dundela, Ont	100
Cookshire Academy, Cookshire, Que	100
Sisters of Charity, St. Bernards School, Moncton, N.B	100
Public school, Boistown, N.B	100
" Brighton, Digby co., N.S	75
Convent of Sacred Heart, Sault Ste. Recollet, Que	75
Freeport school, Freeport, Digby co., N.S	125
Public school, Eganville, Ont	100
" Comox, B.C	75
Dalhousie College, Halifax, N.S	125
Public school, Ulverton, Que	100
Academy of St. Joseph, Montreal, Que	100
St. Paul's College, Varennes, Que	100
Collegiate Institute, Ridgetown, Ont	125
School, District No. 2, Pt. Wolfe, Albert co., N.B	100
Alexandra school, St. John, N.B	100
Louisburg school, Louisburg, C.B., N.S	100
Agnes and Megantic Model School, Lake Megantic, Que.	100
Public school, Armstrong, B.C	100
High school, Vernon, B.C	125
Public school, Sandwich, B.C	100
School, Chester, Lunenburg co., N.S	125
High school, Mabou, C.B., N.S	75
Village school, Melbourne, Que	75
High school, Toronto Junction, Ont	125
Cambridge St. school, Ottawa, Ont	100
Grammar school, Sussex, N.B	100
Public school, Grand Forks, B.C	100
College St. school, Halifax, N.S	100
High school, Somerset, Kings co., N.B	125
Industrial Advocate, Halifax, N.S	75
Derby Superior school, Millerton, N.B	100
Public school, Richmond, Ont	100
Museum, Gerrard Road, Rotherham, Eng	125
College St. Louis, St. François de Beauce, Que	100
St. Alban's school, Brockville, Ont	100
Congregation de Notre Dame, Port Hood, C.B., N.S	75
Loyola College, Montreal, Que	125
Collegiate Institute, Chatham, Ont	125
School, Parkers Ridge, N.B	75
Sacred Heart, Arthabaskaville, Que	100
Bellevue Convent, Notre Dame de Bellevue, Que	75
London School Board, London, Eng	75
Public school 170, New York, U.S	75
Convent Jesu Marie, St. François de Beauce, Que	75
Normal school, Vancouver, B.C	125
Public Library, Bruce Mines, Ont	125
High school, Bridgetown, N.S	125
Collegiate Institute, Brockville, Ont	125
" Jarvis St., Toronto, Ont	125
Government Agricultural school, Compton, Que	125
Coaticook Academy, Coaticook, Que	125
Public school, Dresden, Ont	75
High school, Athens, Ont	125
Public school, Bideford, P.E.I	75
Guillet's school, Ottawa, Ont	75
	6,250

The undermentioned have also been supplied with certain specimens of Canadian minerals, viz.:—

R. M. Thorburn, St. John's, Newfoundland.	4
H. Parkhurst, Rockport, Ont.....	4
T. J. McFarlane, New Glasgow, N.S. (in exchange).....	34
W. E. Cunningham Lamott, Pennsylvania, U.S	1
H. Piers, Provincial Museum, Halifax, N.S.....	2
Ed. Locke, Shrub Hill, Worcester, England.....	3

Report of the Mines Section for 1902.

Mr. E. D. Ingall.

Of the work of the Mines Section, Mr. E. D. Ingall reports as follows:—

Staff.

The functions of the Section in relation to the mineral resources and industries of Canada have been performed during the past year as far as the means at disposal permitted. The staff of the Section numbers three, namely: the officer in charge, upon whom, in addition to the general direction of the Section, most of the technological work devolves; Mr. J. McLeish, who, besides what help he renders in the general work, has special charge of the statistics, and Mrs. W. Sparks whose duties are numerous and general. During part of the winter months Mr. T. Denis, formerly attached to the staff but now entrusted with field geological work, has helped in the technological work. For four months during the summer and part of the winter, Mr. Ingall was engaged in field geological work in the district of Algoma.

Comparison with United States.

As comparison has been frequently and publicly made of the results attained by us with those of the equivalent branch of the Geological Survey of the United States, it may be well to draw attention to certain facts bearing upon this point, without which such a comparison is misleading.

The objects of both branches are practically the same, viz: to study and report upon the economic mineral resources of the country, and upon the mineral industries resulting from their exploitation. The results attained take shape chiefly in the form of the annual reports, which should contain, not merely the statistics illustrative of the mineral production but technical descriptions of the mining and allied industries; concise descriptions of the mineral deposits, etc.

The statistics have been issued regularly by this Section since 1886, taking the form of a preliminary advance statement, issued soon after the close of the year dealt with, followed later by the full annual

report giving revised and more complete figures accompanied by much explanatory matter. From time to time special technological articles have been included covering various industries, and a commencement is now being made to carry out the plan suggested some years ago, of issuing these in pamphlet form under the name of bulletins.

With the extensive field of work offered by the Dominion with its scattered and mostly unorganized mineral industries, it has been found impossible to do more than make a beginning along these lines, and with the present rapid growth of our mineral industries a much more vigorous policy is needed to meet even the most pressing needs of those interested directly or indirectly in exploiting our mineral resources. As giving some idea of the cost of such work it may be mentioned that the Division of Mining and Mineral Resources of the United States Geological Survey has at its disposal an annual grant of $50,000, whereas we receive only about one-tenth of that amount. The staff engaged on their work numbers some thirteen besides outsiders who write up special industries, where we number from two to four only. It is true their mineral industries produce fifteen times as much as those of Canada, but owing to the mineral deposits of our own country being scattered over so extensive a territory, and to the industries being as a rule unorganized and often ephemeral, the work of keeping in touch with discovery and development is proportionately very much greater.

Cost of each.

In view therefore of these facts and of the present needs of the public interested in our mineral resources and industries, it would seem that the time is quite ripe for the reinforcement of the Mines Section, so that it may more vigorously and completely carry out the policy inaugurated in the past, but largely held in abeyance so far by want of means.

Advance statements.

An attempt has been made in the following pages to give a resumé of the mineral industry of Canada. The advance statement herewith reproduced, was issued on the fourth of the month, and to it is added any information as to the different industries which was not available thus early in the year (13th March). It is hoped that an extension of the system may be possible in the future, rendering available more complete and reliable data even thus early. At present however much of the matter given in this preliminary statement must be taken as subject to revision later in the year.

SUMMARY OF THE MINERAL PRODUCTION OF CANADA IN 1902.

(Subject to Revision.)

Product.	Quantity. (a)	Value. (a)
Metallic.		$
Copper (b) ..... Lbs.	39,168,202	4,553,695
Gold, Yukon ..... $ 14,500,000		
" all other 6,241,245		
.....	.....	20,741,245
Iron ore (exports) ..... Tons.	428,901	1,065,019
*Pig iron from Canadian ore ..... "	71,665	1,043,011
Lead (c) ..... Lbs.	23,000,000	935,870
Nickel (d) ..... "	10,693,410	5,025,903
Silver (e) ..... Oz.	4,373,000	2,280,957
Zinc ..... Lbs.	166,700	8,068
Total metallic	....	35,653,768
Non-Metallic..		
Actinolite ..... Tons.	550	4,400
Arsenic ..... "	800	48,000
Asbestus ..... "	31,779	1,191,338
Asbestic ..... "	8,662	12,114
Chromite ..... "	900	12,400
Coal ..... "	7,639,255	15,538,611
Coke (f) ..... "	506,466	1,538,930
Corundum ..... "	768	84,468
Felspar ..... "	7,576	11,375
Fire clay ..... "	2,741	4,283
Graphite ..... "	1,095	28,300
Grindstones ..... "	6,159	48,400
Gypsum ..... "	332,045	356,317
Limestone for flux ..... "	293,108	218,809
Manganese ore ..... "	84	2,774
Mica ..... "	.....	400,000
Mineral pigments—		
Baryta ..... "	1,096	3,957
Ochres ..... "	4,955	30,495
Mineral water	.....	100,000
Moulding sand ..... Tons.	13,352	27,651
Natural gas (g)	.....	195,992
Peat ..... Tons.	475	1,663
Petroleum (h) ..... Brls.	521,485	934,740
Phosphate ..... Tons.	856	4,953
Pyrites ..... "	35,616	138,939
Salt ..... "	63,056	288,581
Talc ..... "	689	1,804
Tripolite ..... "	900	15,800

*The total production of pig iron in Canada in 1902, from Canadian and foreign ores amounted to 357,903 tons, valued at $4,243,545, of which it is estimated 71,665 tons, valued at $1,043,011, should be attributed to Canadian ore and 286,238 tons, valued at $3,200,534, to the ore imported.

(a.) Quantity or value of product marketed. The ton used is that of 2,000 lbs.
(b.) Copper contents of ore, matte, &c., at 11·626 cents per lb.
(c.) Lead contents of ores, &c., at 4·069 cents per lb.
(d.) Nickel contents of ore, matte, &c., at 47 cents per lb.
(e.) Silver contents of ore at 52·16 cents per oz.
(f.) Oven coke, all the production of Nova Scotia and British Columbia.
(g.) Gross return from sale of gas.
(h.) Includes crude oil sold to refiners and oil sold for fuel and other purposes.

SUMMARY of Mineral Production of Canada in 1902—*Concluded.*

PRODUCT.	Quantity. *(a)*	Value. *(a)*
STRUCTURAL MATERIALS AND CLAY PRODUCTS.		$
Cement, natural rock ..... Brls.	124,400	91,870
" Portland ..... "	594,594	1,028,618
Granite	.....	170,000
Pottery	.....	200,000
Sands and gravels (exports).. ..... Tons.	159,793	119,120
Sewer pipe.....	.....	294,465
Slate.....	.....	19,200
Terra-cotta, pressed brick, &c	.....	348,597
Building material, including bricks, building stone lime, tiles, etc.....	.....	5,700,000
Total structural materials and clay products.	.....	7,771,879
" all other non-metallic.....	.....	21,245,094
Total non-metallic.....	.....	29,016,964
" metallic	.....	35,653,768
Estimated value of mineral products not returned ...	.....	300,000
Total, 1902	.....	64,970,732
1901, Total.....	.....	66,712,708
1900 "	.....	64,505,137
1899 "	.....	49,584,027
1898 "	.....	38,697,021
1897 "	.....	28,661,430
1896 "	.....	22,584,513
1895 "	.....	20,648,964
1894 "	.....	19,931,158
1893 "	.....	20 035,082
1892 "	.....	16,628,417
1891 "	.....	18,976,616
1890 "	.....	16,763,353
1889 "	.....	14,013,913
1888 "	.....	12,518,894
1887 "	.....	11,321,331
1886 "	.....	10,221,255

REMARKS.

Slight decrease.

Notwithstanding the most gratifying increase in the total value of the production of non-metallic minerals, the grand total of the value of the production of all the mineral industries of Canada, shows a falling off of 2·61 per cent. This is due not merely to the decrease in the Yukon output of gold of $3,500,000, but also to the very considerable falling off in values of all the remaining metallic minerals except nickel. But for the large growth of the coal and coke industry, helped by increases in many of the other non-metallic products, the decrease in the grand total, on account of the falling off in the metallic class would have amounted to nearly 10 per cent. The total of the metallic

products, shows diminution amounting to over output 15 per cent, as compared with the equivalent figures for 1901, whilst the non-metallic class shows an increase of over 20 per cent in a similar comparison.

Proportion of metallics.

In regard to their relative importance, the metallic industries as a group, still occupy the most important place, although not leading to the extent they did in former years. They contributed about 55 per cent of the whole, the non-metallic following with nearly 33 per cent, and the structural class with nearly 12 per cent. Grouping the metalliferous class with coal and coke, about 81 per cent of the value is accounted for.

The following table gives the relative contribution to the grand total of the different mineral industries in comparison with 1901.

1901.		1902.	
Product.	Per cent of total Production.	Product.	Per cent of total Production.
1 Gold	36·17	1 Gold	31·92
2 Coal and coke	17·99	2 Coal	23·92
3 Copper	9·14	3 Building material	8·47
4 Building material	7·71	4 Nickel	7·74
5 Nickel	6·89	5 Copper	7·01
6 Silver	4·89	6 Silver	3·51
7 Lead	3·37	7 Coke	2·37
8 Asbestus	1·89	8 Asbestus	1·85
9 Coke	1·84	9 Cement	1·72
10 Pig iron (from Canad'n ore)	1·82	10 Iron ore (exports)	1·64
11 Petroleum	1·51	11 Pig iron (from Canad'n ore)	1·61
12 Iron ore (exported)	1·14	12 Lead	1·44
13 Cement	0·99	13 Petroleum	1·44
14 Gypsum	0·51	14 Mica	0·62
15 Natural gas	0·51	15 Gypsum	0·55

It will be noted that copper has fallen from third to fifth place; lead from seventh to twelfth. Iron ore exported has advanced two places, but pig iron from Canadian ore is now eleventh in importance, where last year it ranked tenth. Silver maintains its position, whilst nickel advanced to fourth.

Increases and decreases.

INCREASE AND DECREASE IN 1902.

Product.	Quantity.		Value.	
	Increase.	Decrease.	Increase.	Decrease.
	p. c.	p.c.	p.c.	p.c.
Metallic—				
Copper	3·54			21·99
Gold				14·04
Pig iron (from Canadian ore only)		13·76		13·95
Pig iron (from both home and imported ores)	30·44		20·80	
Lead		55·68		58·39
Nickel	16·37		9·39	
Silver		21·05		30·15
Arsenic	15·27		15·17	
Non-metallic—				
Asbestus and asbestic	0·55			3·67
Coal	22·67		29·43	
Coke	38·56		25·30	
Corundum	82·88		59·03	
Cement	59·64		69·76	
Gypsum	13·02		4·75	
Petroleum		16·21		7·29
Salt	6·10		10·01	

In studying the above table, it will be noted that the showing made by the metallic class as a whole is in great contrast with that exhibited by the non-metallic class. In the former case, although copper, pig iron as a whole, and nickel, were turned out in larger quantities than last year the beneficial results were modified or even reversed by the lower values obtained. In all the other metallics, the heavy falling off in production is markedly aggravated by the fall in values in these instances also.

Non-metallics.

In the non-metallic class, there is fortunately a better record. Only in the cases of asbestus, asbestic and petroleum do the values show decreases, whilst for all the other items the proportional growth is very marked. Although in several of the industries there has been a falling off in values, in others on the contrary, the increase has been very marked.

Iron smelting.

It will be noticed that although the output of pig iron from Canadian ore has fallen off, the whole iron smelting industry shows notwithstanding marked growth. Taking the values of the coal and coke produced during 1902, together with those in the allied iron smelting industry, an increase of nearly $4,500,000 is exhibited, shewing a

growth in these, the most commercially important industries of the country, more than offsetting the falling off of the $3,500,000 in the necessarily fluctuating product of the placer gold washings of the Yukon territory.

The value per capita of the total mineral products compared with our population was $11.87 in 1902, as against $2.23 in 1886, the first year for which figures are available.

Viewing the different industries separately some of the more interesting features are given below :—

Important features of different industries.

Copper.—Despite the drop in copper values during the latter months of 1901 and the continuation of low prices throughout 1902, an average of less than 12 cents per pound at New York, there was produced in Canada in 1902 nearly 20,000 tons of copper in ore, matte, etc., which was a slight increase over the output of the previous year. In the eastern part of Canada, perhaps, one of the most interesting features of this industry was the production of electrolytic copper by the Intercolonial Copper Company at their works in New Brunswick. The pyrites ores at Capelton, Quebec, are at present the chief source of copper production in this province, and the output varies but little from year to year. In Ontario the nickel-copper ores of the Sudbury district were worked to about the same extent as during the previous year. Extensive preparations, however, are being made, it is said, to push operations vigourously during 1903 and a largely increased output is confidently looked forward to for 1903. In British Columbia there was an increased production of copper. From the Rossland district about 350,000 tons of gold-copper ore were shipped to the smelters, while over 500,000 tons of the low-grade copper ores of the Boundary district were mined and shipped.

Gold.

Gold.—The gold mining industry in Canada in 1902 shows no radically new features. The output of the Yukon placers continues to decrease, the output for 1902 being estimated at $14,500,000 in the preliminary statement. This estimate is based on receipts at United States mints. Royalty was paid on gold officially valued at $12,018,561. As, however, for the purposes of the royalty, the gold is arbitrarily valued at $15 per ounce, and as much of the gold is really worth more than this, the actual value of the gold sent out of the country would necessarily be somewhat more than that represented by the royalty certificates. Then, again, some allowance will have to be made for gold in small amounts on which no royalty is payable, and on that smuggled out to avoid payment of royalty. Taking these

various items into consideration it will probably be found that the above estimate of $14,500,000 is not excessive. The output of the other established gold mining districts continues with practically the same results as during the previous year.

Iron.

Iron.—The production of iron ore in Canada is not at present commensurate with the iron smelting interests of the country. The total quantity of Canadian ore used in Canadian furnaces was 125,664 tons, in addition to 539,381 tons of imported ore. The total quantity of pig iron made was 459,902 tons (of 2,000 lbs.) Of this product 237,244 tons were made in Nova Scotia in the furnaces of the Dominion Iron and Steel Company and the Nova Scotia Steel and Coal Company. Quebec furnaces contributed 7,970 tons, and Ontario furnaces at Deseronto, Hamilton and Midland produced 112,688 tons. The product of the Quebec furnaces at Radnor Forges and Drummondville and of the Deseronto furnace in Ontario, is charcoal pig iron, while coke is used as fuel in all the other furnaces.

The Clergue interests at Sault St. Marie have been erecting blast furnaces at that place, intended to use charcoal as fuel, but these have not yet been completed.

The manufacture of steel is rapidly becoming an important feature of Canada's metallurgical industries. Over 150,000 tons were made in 1902, valued at nearly $3,000,000. A steel rail plant was completed and placed in operation at Sault Ste Marie. Continuous operation, however, has not been maintained so far.

Lead.

Lead.—The quantity given in the above tables practically represents the contents of the ores produced from all the British Columbia mines. The output of 1902 has fallen off over 55 per cent as compared with the previous year. The silver output of this province has also suffered in sympathy with the lead, although not nearly to the same extent as explained under the heading silver.

Nickel.

Nickel.—The nickel industry exhibits, in 1902, but little change so far as quantity of production is concerned. This has already been referred to in connection with copper. In addition, it may be said that the ore smelted amounted to 211,847 tons, producing 23,211 tons of ordinary matte carrying an average of about 19·4% of nickel and 2,100 tons of Bessemer matte averaging 40·27% nickel. Besides the product sold by the Canadian Copper Co. and the Mond Nickel Co. a considerable tonnage of ore was mined by the Lake Superior Power Co. at the Gertrude and Elsie mines. The greater part of this was

sent to the roast heaps, a small portion going to the reduction works at Sault Ste. Marie.

Silver.—Although British Columbia is the chief silver-producing province of the Dominion, small quantities have, as usual, been produced from some of the other well-known districts, viz., that obtained as a by-product from the pyrites ores near Capelton, Quebec, that from the mines in Thunder Bay district, Ontario, and the silver found in association with the placer gold of the Yukon Territory. In British Columbia there was a falling off in the production. The general conditions affecting this industry have already been referred to in part in treating of the lead product. The ores of the Rossland and Boundary districts, however, carry appreciable quantities of silver and an increase in the production of these ores has to some extent offset a decrease in the output of the silver and silver-lead ores. Silver.

Zinc.—The production of zinc as given in the preliminary summary table of mineral production was all derived from a newly opened mine in the township of Olden, Frontenac county, Ontario. Although no statistics of zinc ores in the province of British Columbia are as yet available, there appears to have been some demand during the year from the United States for zinc ores from this province, and several shipments are reported as having been sent to Kansas. Zinc.

Coal.—Amongst the non-metallic minerals coal is by far the most important. It contributed in 1902 nearly 24 per cent of the total mineral production in Canada, being exceeded only by gold, and shows an increase of more than 22 per cent over the output of 1901. Coal-mining operations were especially active in Nova Scotia, where the coal sold during the year amounted to 4,229,120 long tons. Of this amount over 33 per cent was sold within the province, over 40 per cent found a market in New Brunswick, Prince Edward island, Quebec, etc., while the balance was exported, chiefly to the United States. Coal.

The average value placed upon the coal product of this province at shipping points on the authority of Mr. C. Shields, vice-president of the Dominion Coal Company, was $2 per long ton. There has been a considerable demand in adjacent portions of the United States for Nova Scotia coal, intensified no doubt by the stringency in the supplies of anthracite coal due to the long strike of the anthracite miners in Pennsylvania. The action of the United States government in removing the duty for the period of one year on bituminous coal entering that country will probably result in largely increased shipment Demand for Nova Scotia coal.

of Nova Scotia coal in that direction. A substantial increase was made in the output of coal from the North-west Territories from the well established mines at Souris and Roche Percé, Lethbridge, Anthracite, Canmore, Frank and from the many small mines in the Edmonton district.

The Crow's Nest Pass Coal Co. continued to develope their properties They did not however, owing to an unfortunate explosion in May, 1902, and several subsequent strikes, materially increase their output.

The production of the Vancouver Island collieries was somewhat less than during the previous year.

A largely increased quantity of coke was made during 1902 to meet the requirements of smelting operations.

Other Non-metallic Minerals.—Amongst other non-metallic minerals important increases are shown in *arsenic*, *corundum*, *cement* and *gypsum*. Arsenic was produced to the extent of 800 tons, valued at $48,000. This output is of interest as being the only production of arsenic on this continent. The asbestus mining industry of the eastern townships, Quebec, exhibits but little change from the previous year, the output of 1902 being valued at $1,203,452.

Corundum production shows an increase of over 80 per cent compared with 1901. This industry, although only commenced in 1900, is showing a strong and steady growth. The output is derived from the Craig mine in the township of Raglan, Renfrew county. The Ontario Corundum Company has also begun operations in the township of Carling, Hastings county.

Other mineral products.

Much might be written with regard to numerous other mineral products, but these hardly call for special mention at the present time, with the exception perhaps of Portland cement. A good deal of energy has been displayed during the past two years in the establishment of mills for the manufacture of Portland cement from marls and clay, &c., chiefly in the province of Ontario. There were eight Portland cement works in operation during 1902 as compared with four in 1901. The capacity of the works in operation in 1902 was about 3,000 barrels per day, while one mill with a capacity of 1,000 barrels per day was almost ready for operation at the close of the year, making the total capacity of Portland cement works already in operation at the beginning of 1903 about 4,000 barrels per day. The total quantity of Portland cement made in 1902, was 526,335 barrels, while the sales were 558,594 barrels. Stock in manufacturers' hands on the 1st January, 1902, were 65,705 barrels, and at the close of the year 33,446 barrels.

Imports of cement during six months ending December, 1902, were 1,255,495 cwt., or about 313,874 barrels, valued at $482,915. Cement.

In the general statement of the mineral production for the year, as contained in the summary of the mineral production of Canada in 1902 (subject to revision), the metallic production is given in terms of fine metal contained in ore, matte, etc., and valued at the final market value of the metals in some standard and recognized market. This has been considered as the most satisfactory method for the purpose of a general statement and for use in comparison with past years and with other countries. Such compilation, however, does not make any less useful or interesting a statement of the production of raw ores during the year, although to give a fair monetary value to the raw materials as shipped from the various mines, would be a matter of no small difficulty.

Manifestly the materials representing the first product as shipped from the works or mines will represent various and changeable values. For instance, of the different districts contributing to the output of copper, some produce raw ore and some partially finished products of processes of extraction. Confusion also arises from the fact that the values of given ores, etc., depend upon the presence of other constituents.

Then the spot values, depending as they do upon the extent to which extraction processes have been carried, are not only not comparable from year to year, owing to changes in practice, but the differences in condition and value between these varying sources of the same metal are such as almost to necessitate their separation into different classes.

In British Columbia, according to the annual report of the provincial mineralogist the tonnage of metalliferous ores mined was as follows by districts: Tonnage of metalliferous ores mined in B. C.

	Tons.
Grand Forks, Kettle River and Osoyoos Division	521,402
Rossland	329,534
Nelson	77,810
Slocan and Ainsworth	26,092
Coast	31,802
East Kootenay	3,881
Other districts	8,478
	998,999

Ontario produced iron ore, nickel, copper ores, gold quartz, etc., to the extent of about 725,000 tons.

In Quebec the pyrites ores of Sherbrooke, though worked primarily for sulphuric acid, may, owing to their copper and silver contents, be classed as metalliferous. These, with iron ores and galena, and including the copper ores of New Brunswick, might account perhaps for about 60,000 tons in 1902.

Metallurgy.

Work by Mr. Donald Locke.

In October it was decided to employ Mr. Donald Locke, a graduate of Freiburg School of Mines, as metallurgist and assayer. On October 21 Mr. Locke left Ottawa for Sudbury with instructions to make a short report on the copper-nickel smelting processes of the Canadian Copper Company, the Ontario Smelting Works at Copper Cliff, and the Mond Nickel Company at Victoria Mines.

He was engaged in making the necessary examination of the various processes till November 4 when he returned to Ottawa. His summary report is as follows :—

Canadian Copper Company's works.

At the Canadian Copper Company's works there were, at the time of my visit, eight Herreshof blast furnaces in operation, each smelting about 130 tons a day. The ore, which is heap-roasted, is practically self fluxing, only a small quantity of quartz being added. It contains about 1½ per cent copper and 2½ per cent nickel. Each furnace produced nearly 13 tons of matte containing about 12 per cent copper and 22 per cent nickel. The matter is tapped at intervals from the forehearth and when cold is broken and sent to the Ontario Smelting Works for concentration. The slag flowing continuously from the foreheath is granulated in McArthur granulating troughs. It assays about 0·27 per cent copper, 0·40 per cent nickel, 32 per cent silica and 40 per cent iron.

An experimental plant is in course of erection to see what can be done in the way of smelting pyritically. It is hoped to reduce the coke consumption to 3 or 4 per cent of the charge by using a hot blast and an oxydizing atmosphere in the furnace and utilizing the heat developed by the burning of the sulphur and iron of the ore.

The Ontario Smelting Works were concentrating the matte from the Canadian Copper Company to a matte containing 25 to 30 per cent copper and 50 to 55 per cent nickel.

Concentration of matte.

The matte arriving from the Canadian Copper Company is reduced to a fine powder and roasted in Brown straight-line calciners, reducing the sulphur from 25 to 30 per cent down to 5 to 8 per cent. The

roasted matte is smelted in two Oxford furnaces, being put through in thhe powder with quartz tailings and some roasted ore. Matte and slag are separated in the Oxford siphon-tap forehearth whence they flow in continuous separate streams into cast iron slag pots; the matte is sent to the Oxford Company, N.J., for the separation of copper and nickel, and the slag returns to the Canadian Copper Company's works where it is resmelted to extract the nickel and copper it contains.

Mond Nickel Company.

The Mond Nickel Company at Victoria mine treats the ore from its own mine, producing a concentrated matte with about 80 per cent copper and nickel and ½ per cent iron; this is sent to Clydach, Wales, to be treated there by the Mond process for copper and nickel.

The heap-roasted ore is brought to the smelter by an aerial tramway and tipped into bins above and behind the blast furnace feed floor.

The ore, assaying about 2·5 to 3 per cent copper and about 3 per cent nickel, is smelted in rectangular, steel waterjacked furnaces 12 feet high and 44 inches by 120 inches at the tuyeres; the two furnaces (only one runs at a time) have each 16 tuyeres, 8 on each side, a water-cooled cast iron tap jacket and Hixon slag spout. One furnace puts through about 170 tons a day. The charges are dumped directly from the dump cars into the furnace through the open top, alternate charges being fed to the sides by means of a simple device consisting of a wrought iron pipe about 8 inch diameter, the length of the furnace opening, and let down about three feet into the furnace; on this the charge falls and is deflected towards the sides.

The blast is pre-heated by leading the air from the blowers through a channel built above the dust flue and separated from it by a steel diaphram, thus utilizing the waste heat of the furnace gases.

The forehearth is of boiler iron, 9 feet in diameter and 3 feet 6 inches high, with a 6-inch lining of fireclay and quartz; from the foreheath the slag flows continuously and is granulated by a powerful stream of water.

The matte is tapped periodically and flows into the converters, which ar esituated on the lowest level of the smelter. About 20 tons of matte are produced per day by one furnace, assaying about 13 per cent copper and 15 per cent nickel.

Converters.

In the converter department are six horizontal converters of the modified leghorn type, only one of which is in use at a time, the others

being repaired, lined or dried; the converters are 6 feet 8 inches in diameter and 7 feet long: they rest on roller wheels supported by a strong cast-iron frame and are revolved by a vertical rack bar extended downward into a hydraulic cylinder and geared with a toothed wheel attached to the converter. The first charge of a newly lined converter is only about one ton, but as the lining is eaten the size of the charge increases, the average charge being about two tons—a lining lasts 11 to 12 hours, about six charges being blown in this time: a blast of 10 lbs. pressure is employed; the concentrated matte contains about 80 per cent nickel and copper—when cold it is crushed and packed in barrels to be sent to Wales for further treatment. The converter slag is put through the blast furnace to recover its metal contents.

Mapping and Engraving.

Mr. C.-O. Senécal, Geographer and Chief Draughtsman.

Report of geographer and chief draughtsman.

Mr. Senécal reports as follows on the work accomplished under his supervision during the calendar year 1902:—

Staff.

As usual the field assistants who attend to mapping during the winter months left early for the field, and from June to October, the office work was carried on by only a few draughtsmen. Although the progress was satisfactory, this staff is still insufficient to keep pace with the increasing demands made on this office. One or two good map draughtsmen are required to compensate for the assistants who are regularly detached for field-work and who necessarily have to devote considerable time to the preparation of their returns. The intermittent delays in the compilation of some of the maps could, in a measure, be thus avoided.

Routine work.

The general work of laying down geographical projections for new maps, correcting report and map proofs, preparing memoranda on various subjects for the information of the director, the librarian and correspondents, auditing map accounts, collecting and listing instruments for repairs, making office and field tracings, blue-prints, distributing printed maps, etc., was attended to. In this connection it is also desirable to obtain the services of a general office assistant, whose duty would be to attend to the cataloguing of survey records, manuscript sheets and other documents, do typewriting and general draughting. At present, this work which also includes the care and distribution of field instruments, devolves upon the draughtsmen and it is the cause of much delay in the regular map work, while I am

constantly under obligation to the typewriters of the other sections of the department, for copies of map specifications, letters, etc.

The work has been distributed as follows :—

Assignment of work

Mr. L. N. Richard has completed the compilation of the Bancroft map and has drawn the same for engraving. He has prepared the colour copy of the Manitou sheet sheet No. 4, Western Ontario—has compiled and drawn for engraving the map of Shefford mountain ; has traced the greater part of Perth sheet—sheet No. 119, Ontario — for engraving ; has made several zinc-cut drawings for various reports and has spent some time in tracing plans of new surveys, correcting map-proofs, etc. Mr. Richard has now in hand a general index-map of the Dominion, showing the progress of the Geological Survey to the present time.

Mr. W. J. Wilson has, for the greater part of the time spent in the office, been engaged on the compilation of the Ontario sheets Nos. 143 and 156 covering the Michipicoten mining district. His surveys, as well as those of Dr. R. Bell made in that region have all been reduced to the scale of publication, but before final adjustment can be made on the sheets, certain plans of surveys of the Ontario government and of the Algoma Commercial Co., are required. As soon as these plans will have been received the sheets will be promptly finished.

Mr. Wilson, accompanied by Mr. O'Sullivan, left for the field at the end of May, to explore new country in Keewatin district. Since his return, he has been engaged in compiling a map of this exploration for the present Summary Report. Mr. Wilson also spent some time plotting, etc., and writing his report.

Mr. J. F. E. Johnston has completed the compilation of the topographical map of the Klondike mining region and has prepared lists and memoranda of repairs of instruments. He has completed and filed the plotted sheets and note-books of his surveys of 1899 to 1901 and left for the field with Dr. Alfred W. G. Wilson of Montreal, for an exploration of the country north of Lac Seul, Keewatin. Since his return, Mr. Johnston has plotted part of his work, and began the compilation of a map for this year's Summary Report. He is at present on sick leave.

Mr. O. E. Prud'homme has drawn and lettered for engraving, the plans of Lake Catcha, South Uniacke, and Tangier gold districts, Nova Scotia ; the sheets Nos. 59, 60, 61 and 62 of the Nova Scotia series and the map of Klondike mining region. He has pre-

pared the lithographer's copy, (crayon shading) for the topographical edition of the West Kootenay sheet, B.C.; has drawn several zinc-cut illustrations for geological reports, and has drawn for photolithographing the Orographic map of Turtle mountain, Manitoba, and a section of Blue-nose gold mine, Nova Scotia.

Distribution of printed maps.

Mr. Prud'homme has, as usual, attended to the distribution of the printed maps held for sale and distribution. I may here remark that the time spent on this work—which does not properly belong to my office, and is the cause of much delay in Mr. Prud'homme's regular work,—is very considerable, and I would suggest that the stock of printed maps be placed under the direct control of the librarian, and the draughtsman relieved of the distribution.

Mr. J. Keele has completed the compilation of sheets Nos. 119 and 122, Ontario and Quebec series, and spent some time in plotting surveys made by Dr. A. E. Barlow, in Sudbury district, Ontario. He left for the field on June 4, as topographer for Mr. R. G. McConnell, and surveyed the Pelly and MacMillan rivers and tributaries for about 500 miles. He returned to the office on October 17, and has since compiled and drawn a map of the above explorations for the Summary Report.

Mr. W. H. Boyd has assisted Mr. D. B. Dowling in compiling the final map of Ekwan and Trout rivers, Keewatin district; has prepared an office index-map of the various explored fields of the Yukon Territory, and spent most of his time in plotting and putting in shape Mr. R. W. Brock's surveys of 1901. He accompanied this officer in the field last summer as topographer from June 29 to October 10, and surveyed part of the Boundary mining district, British Columbia. He is at present reducing and compiling his data for publication.

Mr. J. A. Robert has continued the compilation of Mr. H. Fletcher's surveys on sheets Nos. 64, 65, 73, 76, 77, 78 and 81 of parts of the counties of Cumberland, Colchester and Hants, Nova Scotia. He has prepared the colour copy for sheets Nos. 44 to 48 and 56 to 58, Nova Scotia; has traced part of sheets Nos. 59 and 60, Nova Scotia, for engraving; has corrected map-proofs and made a large number of tracings of plans of new surveys for the Nova Scotia sheets.

He compiled, from recent data, additions to Mr. H. M. Poole's map of Pictou coal-fields which will shortly be in shape for publication.

Mr. Robert has also prepared a set of drawings for colour patterns for geological sheets and the model of a protractor plotting sheet for copper plate engraving.

He is at present tracing a map of Springhill coal-fields for the Summary Report.

Mr. O. O'Sullivan has almost completed the compilation of the topography on sheets Nos. 54, 67, 68 and 69, Halifax county, N.S., and has traced several plans for office and field use. He left for the field with Mr. W. J. Wilson on May 24, and since his return has plotted his summer's work for the Summary Report, and resumed the compilation of Mr. E. R. Faribault's surveys on sheets 67 to 71, N.S.

Mr. P. Frèreault has compiled additions to Grenville sheet,—sheet No. 121, Ontario and Quebec,—and to the three sheets of Mr. A. P. Low's map of the east coasts of Hudson Bay and James Bay. He has made tracings and colour copy for the printing of the above maps, as well as for the West Kootenay sheet, the east Kootenay map, B.C., and the Victoria Mines map, Sudbury District, Ont.

Mr. Frèreault spent some time on sheets Nos. 16 and 17, Nipigon district, Ont.; prepared a list of Hudson Bay and Ungava District names for the Geographic Board, and attended to general draughting work.

Mr. V. Perrin has been engaged with Mr. McInness, in plotting this officer's surveys covering Ignace sheet—No. 5, Western Ontario series—has traced a portion of sheet No. 59 N.S. for engraving, and attended to general work, cataloguing plans and maps, &c. He has drawn for photo-lithographing a map of the Gaspé oil-fields, Quebec.

The following maps have been compiled by field officers from their respective surveys:—

Map of Ekwan and Trout rivers, Keewatin, scale 8 miles to 1 inch,* and Orographic map of Turtle mountain, Manitoba, scale 1½ miles to 1 inch, by Mr. D. B. Dowling.

Mapping by field officers.

Plans of the following Gold districts of Nova Scotia, by Mr. E. R. Faribault:—

Isaacs Harbour, Guysborough county, scale 500 ft. to 1 inch.

Cochrane Hill, Guysborough county, scale 500 ft. to 1 inch.

Wine Harbour, Guysborough county, scale 400 ft. to 1 inch.

Harrigan Cove, Halifax county, scale 400 ft. to 1 inch.

Tangier, Halifax county, scale 250 ft. to 1 inch.

* This map has been incorporated in map No. 814, which accompanies the present Summary Report.

South Uniacke, Halifax county, scale 250 ft. to 1 inch.

Lake Catcha, Halifax county, scale 250 ft. to 1 inch.

Montague, Halifax county, scale 250 ft. to 1 inch.

Gold River, Lunenberg county, scale— ft. to 1 inch.

Geological sketch map of the Blairmore-Frank coal-fields, Alberta, scale 180 chs. to 1 inch, by Mr. W. W. Leach.

Dr. A. E. Barlow compiled his surveys of the Sudbury mining region on a scale of 40 chains to 1 inch. His map which consists of two sheets, has however been prepared in this office for engraving and printing on the scale of 1 mile to 1 inch. The Victoria Mines portion has been engraved, and the Sudbury sheet is almost ready for engraving.

Another map of part of Sudbury district,—the map of Copper Cliff Company's mines, of a special character, is also under preparation by Dr. Barlow.

New surveys of the chains of islands along the east coast of Hudson bay, have been supplied by Mr. A. P. Low, and incorporated in his map.

Nova Scotia sheets.

The following sheets of the set of geological sheets of Pictou and Colchester counties, N.S., upon which the engravers resumed work last March, after having been for a long time held back on account of certain geological points requiring final investigation, were received from the King's Printer, namely:—Sheets Nos. 43, 44 and 45.

Sheet No. 57 has been signed for printing, and there still remain sheets 46, 47, 48, 56 and 58 in the hands of the printer, but it is hoped that most of these will be received within a short time.*

Dominion map.

The edition of the western half of the general geological map of the Dominion has been issued and distributed. It is only on the 8th of August, however, that the map could be delivered to this department, the lithographer, in December, 1901, notwithstanding previous delays and without the knowledge or permission of this department, having wiped off all the colour stones, had to spend considerable time in doing this work anew.

The colour copy for the eastern half of this map is in progress.

*Since writing the above, the remaining sheets have been received from the printer.

Geographic Board.

The regular meetings of the Geographic Board have been attended and lists of names covering the east coasts of Hudson Bay and James Bay, the northern interior of the Labrador peninsula and the Grenville sheet (sheet 121, Ont. and Que.) have been prepared and submitted to the board for discussion and decision. Another list of a few hundred names for sheets Nos. 59 to 62, Nova Scotia, is also under preparation.

Accompanying maps.

The following ten maps accompany the present Summary Report and illustrate part of the progress made in the field during the past summer :—

No. 810.—The Dominion of Canada, showing the progress of investigation by the Geological Survey of Canada, 1843 to 1903. Scale 250 miles to 1 inch.

No. 805.—Yukon Territory.—Explorations on MacMillan, Pelly and Stewart rivers. Scale 8 miles to 1 inch.

No. 808.—Alberta District.—The Blairmore-Frank coal-fields. Scale, 180 chains to 1 inch.

No. 804.—Manitoba.—Orographic map of lower contour of Turtle mountain. Scale, 1½ miles to 1 inch.

No. 809.—Ontario.—Shore lines of Ancient Great Lakes. Scale, 24 miles to 1 inch.

No. 814.—Ontario and Keewatin.—Explorations south-west of James bay. Scale, 16 miles to 1 inch.

No. 802.—Quebec.—Sketch map of Gaspé oil-fields. Scale, 2 miles to 1 inch.

No. 812.—Nova Scotia.—Preliminary Geological map of Springhill coal-field. Scale, 50 chains to 1 inch.

No. 806.—Nova Scotia.—Transverse vertical section of Blue-nose gold mine.

No. 801.—Prince Edward Island.—Geological outline map of P. E. Island, showing anticlines. Scale, 16 miles to 1 inch.

Maps, etc., published.

A list of maps, plans, diagrams, etc., which have been received from the printer during the calendar year, is appended herewith :—

Catalogue Number.	Description.	Area in Square Miles.
783	General geological map of the Dominion of Canada—Scale, 50 miles to 1 inch (western sheet).	
742	British Columbia—Geological and topographical map of Atlin mining district—Scale, 4 miles to 1 inch	814
771	" —Geological and topographical map of a portion of East Kootenay district—Scale, 4 miles to 1 inch. Preliminary edition	4,958
767	" —Geological and topographical map of Crows Nest coal-fields—Scale, 2 miles to 1 inch. Preliminary edition	
766	Saskatchewan, Athabaska and Keewatin—Geological map of a portion of these districts (Grass river map)—Scale, 8 miles to 1 inch	41,360
777	Quebec—Geological and petrographical plan and sections of Shefford mountain, Shefford Co.—Scale, 40 chains to 1 inch	47
785	Ungava—Sketch map of northern portion of Labrador peninsula—Scale, 56 miles to 1 inch. Corrected edition of map No. 758	
598	Nova Scotia—Sheet No. 43 (Stellarton sheet), Pictou Co.—Scale, 1 mile to 1 inch	216
600	" Sheet No. 44 (New Glasgow sheet), Pictou Co.—Scale, 1 mile to 1 inch	216
	" Sheet No. 45 (Toney river sheet), Pictou Co.—Scale, 1 mile to 1 inch	216
765	" Lake Catcha gold district, Halifax Co.—Scale, 250 feet to 1 inch	
768	" South Uniacke gold district, Hants and Halifax Cos.—Scale, 250 feet to 1 inch	
	Also seven diagrams to illustrate the Mineral Production of Canada, and seven zinc-cut illustrations for report No. 797, a special publication on the Cambrian Rocks of Cape Breton island.	

Maps in progress.

Besides the maps accompanying the Summary Report, 1902, there are nineteen maps in the hands of the King's Printer, and about thirty-five more, the compilation of which is at various stages of progress.

Field instruments.

The examination and repairing of field instruments has been attended to. Several worn-out prismatic compasses, tapes, barometers, etc., have been replaced. The following instruments were purchased :—

One microscope, No. 6, with attachments and set of objectives, from R. Fuess, Stiglitz, Germany. Field instruments.

Four prismatic compasses and tripod heads, Nos. 67–70, from Cary, London, Eng.

Five surveying aneroid barometers, Nos. 64–68, from Harrison & Co., Montreal.

Six pocket clinometer-compasses, Nos. 1–6, from Keuffel & Esser Co., New York.

One telescope for solar compass, No. 11, from W. & L. E. Gurley, Troy, N.Y.

Eight pocket compasses, Nos. 33–40, from T. Shore, Ottawa.

Eight pocket thermometers, Nos. 20–27, from Keuffel, & Esser Co., New York.

Two 100-ft. Chesterman metallic tapes, from Department of Stationery, Ottawa.

One 25-foot Chesterman metallic tape, from Department of Stationery, Ottawa.

Six taffrail boat logs, from G. Ashton Kay, New York.

One 50 foot steel band, No. 25, from Keuffel & Esser Co., New York.

The number of official letters, specification sheets, memoranda, etc., sent and received was 344 and 204 respectively. Correspondence.

Palæontology and Zoology.

Dr. J. F. Whiteaves.

Dr. Whiteaves reports that the manuscript of part V, of volume I, of 'Mesozoic Fossils,' which was commenced in September, 1901, was completed on November 5, 1902, and that an index to the whole volume has subsequently been prepared. This part, which it has taken the greater part of three weeks to see through the press, as now printed, consists of 107 pages royal octavo of letter-press, illustrated by thirteen text figures and twelve full-page lithographic plates. Its preparation has necessitated the examination and critical study of seven additional collections from the Cretaceous rocks of Vancouver, Texada and Lasqueti islands, kindly forwarded by Mr. Harvey of Nanaimo, V.I. For the description of seven of the ten species of crustacea enumerated and illustrated in it, the writer is indebted to the kindness of Dr. Henry Woodward, F.R.S. The volume of which it forms the concluding part, now consists of 416 pages of letter-press, illustrated by twenty-nine text figures and fifty-one lithographic

plates. It may be described as a series of illustrated papers on the fossils of the Cretaceous rocks of the Vancouver and Queen Charlotte islands, in which 252 species are either identified or described.

A preliminary study has been made of the rather extensive collections of fossils from the Silurian rocks of the Ekwan river and Sutton Mill lake, made by Mr. D. B. Dowling in 1901, and a paper descriptive of two new species of *Trimerella* from these rocks has been published in the 'Ottawa Naturalist' for October last. About fifty species of marine invertebrata are represented in these collections, most of which are apparently new to science.

The collections of fossils made last summer, by Mr. D. B. Dowling, from the Laramie deposits near Roche Percée, Assiniboia, of fish remains from the supposed Niobrara shales at Arnold, Manitoba, and from the Silurian limestone at Stonewall, Manitoba; and those made by Mr. W. W. Leach, from the Laramie and Cretaceous rocks of the the Old Man river, Alberta, have been subjected to a preliminary examination, and their geological horizons approximately indicated.

The collections of fossils made last summer by Dr. R. A. Daly from the Palæozoic rocks at different localities in the Chilliwak river valley, have been studied, and some notes on these fossils have been prepared for Dr. Daly.

Collections of fossils, from the Devonian rocks of the Kwataboahegan, Moose and Abitibi rivers, and from the Pleistocene deposits at eight different localities on the Kapiskau, Kwataboahegan and Abitibi rivers, made by Mr. W. J. Wilson last summer, have been examined, and a list of the species represented in them has been supplied, for incorporation in his forthcoming report.

Seven small consignments of fossils from the Corniferous limestone near Amherstburg, Ontario, forwarded by the Rev. Thomas Nattress, have been studied, and the species represented in them have been named as far as practicable. One of these species, which apparently belongs to the genus *Panenka* of Barrande, and to a previously uncharacterized species of that genus, has been described and figured in the 'Ottawa Naturalist' for March last. It is the second species of *Panenka* that has been recognized in the Devonian rocks of Canada.

A preliminary examination and study has been made of a large series of fossil Cephalopoda from the Birdseye, Black river and Trenton formations at several localities in the immediate neighbourhood of Ottawa, kindly forwarded by Mr. Walter R. Billings.

A few fossils from the country south of Abitibi lake (apparently from small boulders), and from near Fernie, B.C., have been examined and some notes on them forwarded to the senders.

In September last eight days were spent with Dr. Ells in examining some rock exposures near Brockville, on Howe island, at Rudd's quarry, near Kingston, and at the cutting of the Grand Trunk railway near Kingston Mills. At this latter locality quite an interesting little collection of fossils was made, including some specimens showing the posterior apical termination of an apparently undescribed species of *Nanno*. These fossils would seem to show that the geological horizon of the rocks from which they were obtained is that of the lowest part of the Black River formation underlying the limestone. The palæontological and zoological collections in the museum of Queens University, Kingston, were also examined, as were also the private collections of fossils, etc., of Mr. Werden at Cherry valley, near Picton, and of Mr. Chadd, at Trenton. In the museum of Queens three specimens of the typical '*Lituites undatus*,' (Emmons) were noticed, and one of these has since been acquired for the museum of the Survey.

At the request of Section IV. of the Royal Society of Canada, a bibliography of Canadian Zoology for the year 1901 has been prepared and presented at its last meeting, for publication in its transactions.

Six short papers, descriptive of some of the latest additions to the zoological collections in the museum, have been written and published in the 'Ottawa Naturalist' for February, June, July, October and November, 1902.

About the usual number of letters, asking for information upon palæontological, zoological and other topics, have been received and answered.

The following specimens have been received from members of the staff, or employees of the department, during the year 1902:—

Hugh Fletcher:—

Five specimens of fossiliferous shale from Messenger brook, near Kingston station, N.S.

Dr. R. W. Ells and J. F. Whiteaves:—

Two small collections of fossils from Ontario; one from Rush bay, Howe island, and the other from the railway cutting at Kingston Mills.

Dr. H. M. Ami :—

About fifty specimens of fossils from the Pleistocene concretionary nodules at Besserers, near Ottawa ; and one specimen of *Trocholites Canadensis*, Hyatt, from the Black River limestone at the Montmorency river, P.Q.

D. B. Dowling :

Forty fossils from the Lignite Tertiary at Roche Percée, Assiniboia ; thirty from the Cretaceous rocks at the Pembina river, Manitoba ; seventeen from the Niobrara shales at Arnold, Manitoba ; and twenty from the Silurian (Upper Silurian) rocks at Stonewall, Manitoba.

W. J. Wilson & O. O'Sullivan :—

110 fossils from the Devonian rocks of the Kwataboahegan and Abitibi rivers, and Piskwochi point, James bay.

Twenty specimens of fossil plants from the Pleistocene deposits of Abitibi river, and 165 Pleistocene fossils from the valleys of the Kapiskau, Kwataboahegan and Abitibi rivers.

W. W. Leach : —

Twenty five specimens of fossil shells and six of fossil plants from the Laramie and Cretaceous rocks of the Old Man river, Alberta.

W. Spreadborough :—

329 birds and small mammals from the boundary region between the Kettle and Columbia rivers, B.C.

The additions to the palæontological, zoological, ethnological and archæological collections in the museum during 1902 and from other sources are as follows :—

By presentation :—

(A.—Palæontology.)

Col. C. C. Grant, Hamilton, Ont.:—

Twenty-nine fossils from the Silurian rocks at Hamilton, five from the drift of Winona, and two from the drift at Burlington Heights.

T. C. Weston, Quebec City :—

Fossil coral *(Tetradium fibratum)* from Lorette falls, P.Q.; one specimen each of *Lingula Quebecensis*, Billings, and *Elkania desiderata* (Billings) from Point Levis, P.Q.

M. P. Davis, Ottawa :-

Specimens of fossil wood from excavations in the bed of the St. Lawrence river, in caisson for south main pier of the Quebec Bridge, Victoria cove, Sillery. Also samples of the materials from different depths and portions of the caisson of the same pier.

Rev. Thos. Nattress, Amherstburg, Ont.:—

Cast of the interior of the body chamber of a large specimen of *Gyroceras Numa*, Billings, from the Corniferous limestone near Amherstburg.

J. E. Narraway, Ottawa :—

Small piece of Black river limestone from Tetreauville, P.Q., with four heads of *Illaenus angusticollis*.

Lawrence J. Burpee, Ottawa :—

Fossil plant (? *Lepidodendron clypeatum*, Lesquereux) and piece of fossil wood (*Cordaites materioides*, Penhallow) from Casey point, Shediac bay, N.B.

Daniel McKenzie, Fernie, B.C. :—

Eight specimens of fossiliferous limestone from near Fernie.

David Armit (per D. B. Dowling) :—

Specimen of *Spirifer pennatus*, Atwater (= *S. mucronatus*, Conrad) from the Albany river shales.

(B.—Zoology.)

J. J. Carter, Ottawa :—

Flying squirrel, from Mariposa township, Victoria county.

W. S. Odell, Ottawa :—

Star-nosed mole, and two weasels, in summer fur, all from Ottawa East.

Rev. C. J. Young, Sharbot lake, Ont. :—

Male Arctic three-toed woodpecker, from near Sharbot lake.

Nest and set of four eggs of the Maryland yellow-throat, from near Lansdown, Ont. ; and set of three eggs of the Herring Gull, from Pine lake, County Frontenac, Ont.

Edwin Beaupré, Kingston, Ont. :—

Female black-breasted plover, from Amherst island, and photos. of the nesting places of four species of Canadian birds.

Set of five eggs of the American Bittern, from Cataraqui Marsh; and abnormally small egg of the Kingbird, from Napanee.

R. W. Tufts, Wolfville, N.S. :—

Two full sets of eggs of the house sparrow, and two of the barn swallow, from Wolfville.

A. P. Low :—

Specimen of the Hudson Bay Lemming *(Dicrostonyx Hudsonius)* from the east coast of Hudson bay.

David McFarlane, Sand point, Ont. :—

Black chipmunk taken at Norway Bay Park.

Lawrence Watson, Charlottetown, P.E.I. :—

Five small pieces of red sandstone with burrows of *Petricola pholadiformis.*

L. M. Lambe, Ottawa :—

Little brown bat (male) from Ottawa.

W. E. Saunders, London, Ont. :—

Sixteen specimens of Unionidæ from Chatham, Ont.

J. Smith, Ottawa :—

Ball of Buffalo hair (probably from stomach of buffalo) found in prairie at Alberta, by J. E. Woods.

(C.—*Ethnology and Archæology.*)

R. W. Brock, Kingston, Ont. :—

Two stone pestles from the north fork of Kettle river, B.C.

A. P. Low, Ottawa :—

Twenty-five specimens of arrow heads, spear heads, chipped flints, sound, east coast of Hudson bay.

and fragment of a stone lamp, from ancient camps, Hopewell

Alfred Stirton, Spencerville, Ont. :—

Ten specimens of fragments of pottery and bone implements from Indian graves and mounds, about two and a half miles east of Spencerville, found eighteen inches below the surface of the ground.

G. B. Greene, Ottawa :—

Stone pipe bowl, with a carved figure of bird found on the south side of the Ottawa river, opposite Aylmer.

T. C. Weston, Quebec City :—

Four bullets from the Plains of Abraham.

Dr. C. F. Newcombe, Victoria, B.C. :

Two water-colour sketches of Chief Weed's house at Masset, B.C., by W. Chapman.

By exchange :—

Fine specimen of *Eurystomites* (?) *undatus* (Emmons), from the Black River limestone at Kingston.

By purchase :—

Two specimens of the Golden Eagle from near Kingston, Ont.

Two full sets of eggs of the Golden-crowned Kinglet, and one set each of the Northern American Raven, Rusty Blackbird, Acadian Sharp-tailed Sparrow, and Red-breasted Nuthatch ; all from Nova Scotia.

Palæontological Work.

Mr. Lawrence M. Lambe.

Mr. Lawrence Lambe reports as follows :—

The first half of the year was spent in a continuation of the study of the vertebrate fauna of the Belly river series of the Cretaceous of the North-west as represented, principally, by my collections in the Red Deer River district in 1897, 1898 and 1901.

Publication of memoir on vertebrates.

The result of this study, begun in 1900, in co-operation with Professor Henry Fairfield Osborn, appeared early in September in the form of a memoir : 'On vertebrata of the Mid-Cretaceous of the North-west Territory,' forming the second part of volume III (quarto) of Contributions to Canadian Palæontology.

Description of a new cretaceous fauna.

This memoir, following the late Professor Cope's first part on 'The species from the Oligocene or Lower Miocene beds of the Cypress Hills,' is descriptive of the fauna of the Belly river series that includes fishes, batrachians, reptiles and mammals. It consists of an introductory section by Professor Osborn on the 'Distinctive charac-

ters of the Mid-Cretaceous Fauna', followed by a descriptive section by myself on 'New Genera and Species from the Belly river series (Mid-Cretaceous)' illustrated by numerous text figures and twenty-one plates.

The general conclusion regarding the age of the Belly river fauna, as expressed by Professor Osborn, is that it 'is more ancient in character both as to the elder types of animals which it contains and as to the stages of evolution among animals which are also represented in the Laramie. The geological interval represented by the Ft. Pierre-Fox Hills marine beds was accompanied by the extinction of certain Jurassic types and progressive evolution of the persistent types. Finally, the fossil vertebrates hitherto described from Montana probably are, in part at least, of Mid-Cretaceous or Belly river age.'

The determination of a definite fauna of Belly River age adds greatly to our knowledge of the terrestrial life of Mid-Cretaceous times and helps, very considerably, to bridge over the gap that has hitherto existed between the varied land fauna of the Upper Jurassic and that of the Laramie.

To quote from a recently published review of this memoir 'the fauna described by Mr. Lambe is chiefly of land and fresh-water groups; some marine types, however, are present. There are thirty-four species represented, of which nearly half are new to science.

Turtles. Turtles, especially *Trionyx*, are very abundant. The Dinosaurs are the largest and most important part of the fauna. The slender, long-limbed and long-tailed, swift running types are represented by a large species of *Ornithomimus* estimated at twenty-two feet in length. The

Dinosaurs. most characteristic Dinosaur are of the Iquanodout or duck-billed, and Ceratopsian or horned groups; these show varions primitive features when compared with the corresponding forms in the true Laramie. *Stereocephalus* is a new genus of Stegosaur or plated Dinosaur with very massive skull armour and protective bony rings around the neck, which very much suggest the tail armature of the Edentale *Glyptodon*.

Mammals. Two mammals are also described, a rare discovery in any Mesozoic formation.'

Much time has been given to the cleaning, the putting together and setting up many of the specimens preparatory to studying them. The preparation of drawings for the text and plate illustrations has also occupied considerable time. The latter part of the summer was devoted principally to seeing the above report through the press, and since then a catalogue, with a running number, of all the vertebrate remains from the Red Deer River district has been completed.

The majority of the specimens representing the Belly River fauna, among which are a large number of types, are now ready to be placed on exhibition, but unfortunately there is no space available, at present, for such a purpose, in the museum of the Survey. No museum space for exhibition of new types.

In April Professor Osborn visited Ottawa in connection with the work on the Red Deer river vertebrata, and later in June I was afforded the opportunity of spending a week in New York for the purpose of studying the Cope collections at the American Museum of Natural History.

During October and part of September drawings were made for plates XLII to LI, both inclusive, illustrating part V, volume I. of Mesozoic Fossils.

Collections of fossils, principally corals, have been determined and named for certain officers of the department for use in their reports.

The latter part of the year has been devoted to a critical study of some important and interesting vertebrate remains representative of the Edmonton fauna of the Cretaceous of the North-west.

Natural History of the International Boundary (49th Parallel).

Mr. James M. Macoun.

During the winter and spring months of 1901–2, such time as could be spared from my work as assistant to Prof. Macoun, was devoted to examining and determining the botanical and other natural history specimens collected near the International boundary in 1901. This work was far from completion when I again went to the field in 1902 and there are still many specimens to be determined. The material collected in 1902 has not yet been touched. Many new species of plants were collected in 1901, descriptions of which have been published in 'The Ottwa Naturalist' and elsewhere. Office work.

When I learned late in April, 1902, that I was to work on the International boundary west of the Columbia river, I at once communicated with Mr. W. Spreadborough who has for so many years acted as my assistant in the field. Mr. Spreadborough being willing to give up the work upon which he was then engaged, I directed him to proceed to Trail, on the Columbia river, a few miles north of the International boundary. He reached there early in May and began Work on Internatinnal boundary.

at once to collect birds, mammals and plants, making full notes on the migration and nesting habits of the birds.

Join Mr. Spreadborough.

Being delayed in Ottawa reading proofs of the Catalogue of Birds I did not join Mr. Spreadborough at Trail until June 12. After examining the specimens collected by Mr. Spreadborough, I spent a few days in the vicinity of Trail that I might obtain a thorough knowledge of the plants of that region as they grew. It may be here stated that both Mr. Spreadborough myself had collected in the Columbia valley in 1890, when Prof. Macoun studied the flora and fauna of the Kootenay district. During the time we were at Trail, Mr. W. T. O'Hara, whose party I was later to join, was working between Midway and the Similkameen river. Mr. O'Hara moved so rapidly across this part of the country that it was not thought advisable to have Mr. Spreadborough accompany him as there would be neither time to make large collections nor to properly prepare the specimens. This dry region is one of the most interesting parts of British Columbia from a natural history point of view, and will require to be thoroughly examined before any general report can be written on the country crossed by the International boundary. This examination should be made in May and June as spring and summer come a month earlier than farther to the east and west.

Flora and fauna of Cascade region.

On June 24, Mr. Spreadborough and I went west to Cascade, where we were joined a week later by Mr. O'Hara's party. We remained at Cascade until July 5, when the whole party started east along the Dewdney Trail. The fauna and flora of the region about Cascade differs widely from that of the Columbia valley as at Cascade the drier country is touched. It is, in fact, the point at which the plants characteristic of the Columbia valley mingle with those of the arid region west of Cascade.

Results.

The remainder of the summer was spent between Cascade and Waneta, at which point the Columbia river crosses the International boundary. The progress of Mr. O'Hara's party being necessarily slow, frequent side trips were made by Mr. Spreadborough and myself for which the requisite transport and supplies were furnished me by Mr. O'Hara. Every high mountain within reach was climbed and though a few species new to science and others new to Canada were collected the results of the summer's work in this respect were somewhat disappointing. This is due in part to the fact that except in the valley of the Kettle river at Cascade, there was no change in the character of the country examined, and, partly because practically the whole region traversed had been surveyed at one time or another by

members of the Geological Survey staff who had brought home with them botanical and other specimens. It was nevertheless necessary that a thorough examination should be made of the country between the Kettle and Columbia rivers, and from the data collected last season a complete report can now be written. As soon as the snow fell on the higher mountains I returned to Ottawa, leaving Mr. Spreadborough to continue the work east of the Columbia river. He remained with Mr. O'Hara until the end of the season and added many specimens of birds and mammals to those already collected. Following my instructions, he paid special attention to cryptogams, the flowering plants there being out of season. I cannot write in terms of too high praise of Mr. Spreadborough's untiring energy as a collector and it would have been impossible to attain anything like such good results without his assistance.

Mr. Spreadborough's work most satisfactory.

Mr. O'Hara afforded me every needed facility for moving about the country, and my relations with him and with Dr. Daly who accompained the party as geologist, left nothing to be desired.

The Library.

Dr. John Thorburn, Librarian.

During the past fourteen months, from November 1 to December 31, 1902, there have been distributed 13,910 publications of the Geological Survey, comprising reports, parts of reports, special reports and maps. Of these 10,224 were distributed in Canada; the remainder (3,668) were sent to foreign countries as exchanges to universities, scientific and literary institutions and to a number of individuals engaged in scientific pursuits.

The sales of publications during the above period, including reports and maps, numbered 4,735. The amount received since the publication of the last report, was $641.79.

There were received as donations or exchanges 3,554 publications, including reports, transactions, proceedings, memoirs, periodicals, pamphlets and maps. Besides these, there were purchased 74 publications. The number of periodicals subscribed for was 40. The number of volumes bound was 260. The number of letters received in connection with the library was 2,252. The letters sent out by the library were 1,897. The number of acknowledgments received was 3,655, and there were sent out 740 acknowledgments from the library.

There are now in the library about 13,200 volumes, besides a large collection of pamphlets. Unfortunately, as has been frequently repeated in previous reports, the space available for library purposes is altogether insufficient, and causes a large amount of unnecessary labour in finding information asked for. It is to be hoped that some provision may be made soon to remedy this.

Visitors to the Museum.

The number of visitors who signed the museum register during the year was nearly the same as in 1901, namely 37,728.

Staff, Appropriation, Expenditure and Correspondence.

The strength of the staff at present employed is 56.

There were no changes in the permanent staff during the year.

The funds available for the work, and the expenditure of the department during the fiscal year ending 30th June, 1902, were :—

Details.	Grant.	Expenditure
	$ cts.	$ cts.
Civil-list appropriation	55,200 00	
General appropriations	68,730 00	
Civil-list salaries		48,856 44
Exploration and survey		22,048 36
Wages of temporary employees		23,311 38
Printing and lithographing		16,841 73
Purchase of books and instruments		1,401 51
" chemical apparatus		213 60
" specimens		376 15
Stationery, mapping materials and King's Printer		1,396 87
Incidental and other expenses		2,591 68
Advances to explorers		14,782 99
		131,820 71
Deduct paid in 1900-01 on account of 1901-02		14,234 27
		117,586 44
Unexpended balance Civil-list appropriation		6,343 56
	123,930 00	123,930 00

The correspondence of the Department shows a total of 7,860 letters sent, and 11,239 received.

I have the honour to be, Sir,

Your obedient servant,

ROBERT BELL,

Acting Deputy Head and Director.

ABBREVIATIONS.

Al.	District of Alberta.	N.W.T.	North-west Territories.
B.C.	Province of British Columbia.	O.	Province of Ontario.
M.	Province of Manitoba.	P.E.I.	Prince Edward Island.
N.B.	Province of New Brunswick.	Q.	Province of Quebec.
N.S.	Province of Nova Scotia.	Y.D.	Yukon Territory.

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Old Pupils of All Hallows' School, Yale, B.C., now in Domestic Service

DOMINION OF CANADA

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ANNUAL REPORT

ON THE

DEPARTMENT OF INDIAN AFFAIRS

FOR THE

YEAR ENDED JUNE 30

1902

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1902

No. 27—1903.]

To His Excellency the Right Honourable the Earl of Minto, Governor General of Canada, &c., &c., &c.

MAY IT PLEASE YOUR EXCELLENCY :—

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Indian Affairs for the fiscal year ended June 30, 1902.

Respectfully submitted,

CLIFFORD SIFTON,
Superintendent General of Indian Affairs.

OTTAWA, Dec., 1902.

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REPORT

OF THE

DEPARTMENT OF INDIAN AFFAIRS

FOR THE YEAR ENDED JUNE 30, 1902.

DEPARTMENT OF INDIAN AFFAIRS,
OTTAWA, November 15, 1902.

The Honourable CLIFFORD SIFTON,
Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the report of the Department of Indian Affairs for the fiscal year ended June 30, 1902.

It is gratifying to be able to state that the Indians throughout the Dominion have, on the whole, by their industry and good conduct, not only secured comfort and contentment for themselves, but have contributed their quota towards the welfare of the country. Uniformity of prosperity cannot of course be expected among those scattered over so great an extent of territory, in which the conditions necessarily greatly vary, but while some have been more favoured in one direction, and others in another, the aggregate earnings from the various forms of industry, in so far as the department has been able to obtain account of them, have exceeded those of the preceding year by nearly $213,000.

During the course of the year, the visit of Their Royal Highnesses, the Duke and Duchess of York, afforded many of the Indians an opportunity of giving renewed expression to their affectionate loyalty to the Crown, of which all proved eager to avail themselves.

I wish to place on record here the grievous loss to the Kyukaht band in the West Coast agency, B.C., of their head chief, his brother and twenty-one other of their leading men, who together with the wife of one of the party, set sail in the spring on the sealing schooner *Hatzic*, which has not since been heard of and is now given up for lost.

In connection with these West Coast seal-hunters it may be worthy of mention that the long deferred payment by the Department of Marine and Fisheries, through this department, of the Behring Sea Fishery Commissioners' award to Indian seal hunters, has allayed what had been a source of a good deal of irritation among those concerned.

Health.

Although small-pox continued to linger in the vicinity of many reserves in most of the provinces, I am glad to be able to state that the disease was kept well under control. In one district only, where close supervision was very difficult, namely, in the southern part of the Berens River agency, in Manitoba, did the disease secure anything approaching to a footing. In British Columbia it broke out among the Indians assembled at the Fraser River salmon canneries, and might have proved serious had not stringent measures been promptly taken. Fortunately, the disease was of a mild type, and very few fatalities occurred.

There has been a somewhat heavy mortality among children during the year and this is mainly attributable to the prevalence of malignant measles, and the usual carelessness of parents during the progress of the disease and still more during the stages of convalescence. The disease was more or less epidemic on several reserves in Manitoba and the Northwest Territories, but of most malignant type in the Battleford agency and in Treaty No. 7. The efforts to control this disease were by no means so successful as with regard to small-pox, vaccination and the dread of the disease entertained by the Indians, two main factors in suppressing small-pox, being absent in the case of measles.

Whooping-cough carried off a good many children on Walpole Island reserve, and scarlet fever, as well as typhoid fever, was somewhat prevalent in the Western Division of Lake Superior.

Apart from the causes of mortality just described, the greatest source of ailment and mortality has been, as usual, tuberculosis. But in this relation also a decided improvement would appear to be surely, if somewhat slowly, taking place.

Vital Statistics.

The following table will show the comparative number of births and deaths throughout the provinces, so far as ascertainable.

As will be seen, there have been 2,500 births and 2,349 deaths or a net gain of 151 as against one of 239 for the preceding year, during which births numbered 2,479 and deaths 2,240.

	Births.	Deaths.	Loss.	Gain.
Ontario	590	564	....	26
Quebec	271	209	....	62
Nova Scotia	51	53	2	....
New Brunswick	28	30	2	....
Prince Edward Island	10	9	....	1
British Columbia	774	740	....	34
Manitoba	270	257	....	13
Northwest Territories	506	487	....	19
	2,500	2,349	4	155

Population.

The following comparative statement of population for the two years mentioned shows a net increase for the latter of 8,585, which, more especially in view of the small natural gain, calls for explanation.

The department, it may be stated, has no facilities for ascertaining the numbers of Indians outside of treaty limits, and the figures given in the past have represented little more than guess work. The adoption, this year, of the figures of the recent Dominion Census enumerators has considerably augmented the numbers beyond treaty limits, and caused some minor changes in the numbers of scattered or vagrant Indians in some of the provinces.

In this way 7,518 have been added beyond treaty limits, 1,000 in British Columbia and 88 in Ontario, while 89 have been deducted from Quebec, leaving the aggregate increase from this cause at 8,517. After allowing for these changes, comparison with last year's figures shows an increase of 68, and the difference between that number and 151, the gain through natural causes, is no doubt attributable to emigration.

	1901.	1902.	Increase.	Decrease.
Ontario	20,763	20,983	220	....
Quebec	10,865	10,842	....	23
Nova Scotia	2,020	2,067	47	....
New Brunswick	1,655	1,644	....	11
Prince Edward Island	315	316	1	....
British Columbia	24,576	25,500	924	....
Manitoba	6,840	6,754	....	86
Northwest Territories	17,927	17,922	....	5
Outside Treaty Limits	14,566	22,084	7,518	....
	99,527	108,112	8,710	125

Agriculture.

As a result of a somewhat too generous rainfall, the harvest, in so far as the Indians are concerned, throughout the eastern provinces, was not equal to that of the year before, although a fair average yield was obtained. The largely augmented amount earned as wages, however, compensated for any loss of income derived from farm products.

The harvest of grain was exceptionally abundant this year in the Northwest Territories.

Fruit-growing by the Indians in British Columbia has not so far been carried on as extensively as might have been expected from the favourable nature of the conditions, but it is gradually attracting more attention, and one Indian in the Kootenay district is reported to have planted one hundred and fifty fruit-trees last spring.

Throughout all the provinces the Indian farmers are fairly well supplied with the implements of their calling, which range in class all the way from the latest improved labour-saving machine to the hoe and rake, according to the nature and extent of their operations.

Live Stock.

For live stock the conditions during the year were, generally speaking, sufficiently favourable.

In Manitoba and the Northwest Territories the flooding of the hay swamps, referred to in last year's report, had so far subsided as to render it a good deal easier to secure the necessary supply of grass, and the weather was more propitious for curing it. The winter was in these as well as in other provinces by no means a severe one, so that one way and another the cattle came through it in good condition.

In the older provinces the Indians, so far as the care of horses, cattle, hogs, sheep and poultry kept by them and also the quantity of stock is concerned, compare quite favourably with the ordinary farmer, and on the whole there is little change to report from year to year

In districts where the farming gradually merges into the hunting, trapping and fishing class, the stock become fewer in numbers and of poorer quality in consequence of carelessness with regard to inbreeding.

In the Northwest Territories stock-raising is a much more prominent feature of the agricultural industry than in other provinces where the Indians enjoy better opportunities for eking out their maintenance in other ways.

In Treaty No. 7, and other districts where the climatic conditions render the culture of cereals uncertain, or the lack of a market makes their production unremunerative, the farming Indians depend almost entirely upon cattle-ranching.

The herds in the hands of the mixed farmers continue to increase steadily where they have not already, as in some instances, attained the limit for which hay can be provided.

The ranching industry is destined to reach its greatest proportions in Treaty No. 7, where until comparatively a few years ago the Indians could not be induced to engage in cattle-raising. The Blood Indians, for example, less than a decade ago possessed no cattle, but during the fiscal year, after having sold something over a hundred head, for which they realized over $600, had some three thousand head remaining in the hands of 176 individuals.

The class of cattle held by the Indians of the Territories has through introduction of pure-bred bulls been steadily improving, until the stock is for the most part of an excellent grade. To effect this result the Indians have been made to contribute as far as possible. When an Indian sells a beef animal, he is required to subscribe the sum of two dollars to a fund for the purchase of well bred bulls, and since the establishment of the fund in 1900, over $7,700 has thus been paid into it, so that it may be expected before long to be self-supporting, and entirely relieve the department of expense in the direction of improving stock.

It has long been a matter for serious consideration how to get rid of or turn to good account the useless ponies which the Indians, particularly in Treaty No. 7, have held in such numbers. The growing desire to possess cattle has enabled some exchange

of ponies for heifers to be effected, and for some years past there has been a certain demand in the east for these ponies, but the average price paid to the Indians has been comparatively small, and the number disposed of has not made much impression on the strength of the bands.

In past years the danger of encouraging the Indians to spend their time riding about the country in idleness presented a strong obstacle to any effort to improve the breed of these ponies. It is not thought, however, that this danger need any longer be apprehended, and good class stallions have been introduced on several reserves as an experiment, which, if successful, will prove a benefit not only to the owners, but indirectly to the country at large.

In British Columbia the farming Indians are fairly well supplied with stock of the average class which obtains in the province.

The enterprise observable among these Indians in other directions manifests itself in a tendency to purchase good bulls and stallions for the improvement of their stock, and some of them already breed what are among the best horses in the province, although on the other hand, like their brethren in the Northwest Territories, many keep considerable numbers of useless native ponies which they have likewise to some extent been disposing of in the market which of late years has opened up in the east.

Natural Resources.

The principal natural resources of the Indians are hunting, trapping and fishing, but some minor ones, such as berry-picking, gathering medicinal roots and wild rice and making maple sugar, are by no means an inconsiderable help to many. These natural products not only directly furnish food and winter clothing, but also the means for commercial industry, which extends to other natural products, such as the sale of dead wood, wild hay, &c.

In the province of Quebec the Indians along the lower St. Lawrence, east of the Saguenay, are practically dependent upon the proceeds of hunting and trapping, and fortunately they had a good season, for, although fur was not very plentiful, prices were high.

It has been pointed out for several years past that hunting and trapping have fast been failing other Indians of the province as a reliable resource, but fortunately they have better opportunities for turning to some other means to supply their necessities. For the whole province the proceeds of hunting and trapping show a falling off in value of just about one-half, having only aggregated some $50,945, as against $101,738.50 the year before.

Indians of the same class along the north shore of Lake Superior and westward to Manitoba do not depend by any means so exclusively upon hunting, but secure about a third of their maintenance by fishing. From the former they derived an aggregate value of $133,915, and from the latter of $70,806, which combined was somewhat in advance of the preceding year.

In Manitoba the majority of the Indians are situated along the lakes, but in contrast to the same class in Ontario depend much more on fishing than the chase.

The collective earnings from the former source amounted to $107,181 and from the latter to $68,923.

The comparatively wet seasons for the past few years have had the effect of restocking waters which showed a tendency to depletion, and by restoring swamp-lands, have greatly multiplied the number of musk-rats.

In the Northwest Territories not many are within reach of fisheries and only a few outlying bands make a business of hunting and trapping, but yet so many engage in these pursuits to some extent that the aggregate result is considerable, and for the year represented a value of $139,366, an advance of $27,482 over the last year's total.

In British Columbia the salmon constitute a most important resource, and furnish a very considerable proportion of the food-supply through the province. The runs were so good that many of the bands could without much difficulty have doubled the ample stock laid up for winter's use.

Along the sea coast a considerable quantity of other kinds of fish, such as halibut cod and herring, are cured for domestic consumption as well as for commercial purposes.

The Indians of this province who depend on game and fur had a favourable season and made $203,491 from these pursuits, being a slight increase over their earnings from the same source the year before.

By fishing the large sum of $451,150 was realized, an increase of $42,910.

Wages and Various Earnings.

Throughout the provinces, with the single exception of Manitoba, there has been an increase in the amount earned as wages. The aggregate amount was close upon $1,181,760, an increase not far short of $150,000.

In estimating the true value of augmentation of revenue from this source various considerations have to be borne in mind. In so far as it represents increased energy and a growing spirit of independence the benefit is unquestionable. Moreover, to the extent to which it signifies the abandonment of reliance upon the sale of native wares, the disposal of which involves leaving the reserves and hanging about towns, the advantage seems clear.

On the other hand in so far as it indicates a preference for more or less desultory employment instead of agricultural industry with its more permanent results and in many ways healthier surroundings, the gain seems less assured.

The choice of work made by the Indians when hiring out their services is governed largely by their environment. As a rule, they seem to take most readily to some branch of the lumbering industry, whether in the winter camps or stream-driving in the spring, or in the saw mills or rafting or loading vessels, and in the eastern provinces ample employment of this kind is readily obtainable.

Other forms of employment, if not equally congenial, are more accessible to some, and they take advantage of any openings in proximity to their reserves, as for instance many of the Six Nations band work in the factories in the neighbouring town of Brantford, the Oneidas of the Thames in adjacent canning factories, the Rama Indians in the chemical works at Longford ; the Mississaguas of the Credit and the Caughnawaga Indians in quarries in their respective neighbourhoods, and the latter in the Iron Bridge Company's works at Lachine ; while others find employment at railway depots or with the white farmers in their district, or in picking fruit or pulling flax, in fact, at almost anything that comes to hand, and their services always seem to be in demand and to command good wages.

In Manitoba the main opportunities afforded the Indians for earning wages are in connection with the fisheries, although some of them get work from the lumbermen and miners in the district.

In the Northwest Territories but few openings exist beyond engagements as farm-hands with neighbouring farmers.

In British Columbia the fish canneries, the mining operations and the various works connected with the opening up of the province, afford many opportunities for employment, and of these the Indians are availing themselves more and more and proportionately discarding their more precarious and supplementary methods of providing for their wants.

Under the head of 'Various Earnings', are included all from other sources than agriculture, hunting, fishing, wages, land rentals and annuities, and they represent no small amount in the aggregate, having reached a total of $607,375 for the year.

This is a decrease of slightly over $27,700 as compared with the year before, but in view of the largely increased revenue from wages, it does not indicate relaxation of effort, but a change in direction which for reasons already referred to does not seem to be regrettable. The various earnings embrace manufactures such as canoes, paddles, oars, axe-handles, baskets, lacrosse sticks, snow-shoes, moccasins, Indian bead and other fancy work, the sale of wild medicinal herbs and roots, and other things, a complete enumeration of which would unduly extend the list.

In Manitoba and still more in the Northwest Territories there is comparatively little market for the more distinctively Indian manufactures, and the contingent earnings are principally from the sale of fire-wood and hay.

In British Columbia, whether it be from some inherent difference in their constitution or from the fact that the Indians have come into contact with civilization, they display an unusual spirit of enterprise and self-reliance, together with a readiness to adapt themselves to the usages of the dominant race. This manifests itself in many ways such as in the superiority of their dwellings, their undertaking of such enterprises as purchasing and travelling about with threshing-machines, the establishment of co-operative stores in some of their villages, and, as has recently occurred, the acquisition of a site of some ten acres in extent near the mouth of the Skeena river, and the erection thereon and equipment of a small salmon cannery.

Houses.

The steady advancement of such of the Indians as live in contact with the whites and have adopted industrial methods, is clearly evidenced by improvement in their houses and other buildings, although. of course, to appreciate this the view must not be confined to any single year.

In the older provinces, where the Indians have through the long course of years become largely imbued with the sentiments, manners and customs of surrounding communities, their houses, generally speaking, are, in proportion to their means, as good as those of their neighbours and meet the requirements of their circumstances.

Where lumber is accessible, frame houses are common, while those built of logs are for the most part neat and comfortable and as a rule all are well furnished.

While, therefore, no great change need be looked for among the class referred to, none the less a certain tendency towards improvement is perceptible and perhaps shows itself more in the direction of erecting better stables and more commodious barns than in connection with the dwellings. As an example of this it may be noted that eleven large barns were built on the Six Nations reserve during the year.

In the younger provinces the development of the proprietary spirit, which has for years past been manifesting itself in the effort on the part of the individuals to acquire farming implements and improved stock, is extending to an ambition to possess a better class of buildings. In Treaty No. 7, and more or less in the other districts, as lumber has been becoming more accessible and the Indians better off, they have been expending their earnings in replacing the old mud or thatched with shingle roofs, flooring their houses, putting in larger windows and so forth.

It was only some three or four years ago that in the Birtle agency the erection of the first frame house on stone foundation was referred to as an evidence of the dawn of improvement. Now there are several of this class of dwelling in that agency, and they have begun to make their appearance in other places, as among the Peigans, Bloods, Stonies, and possibly other bands.

In Manitoba the farming Indians are greatly improving their buildings, and especially on the St. Peter's reserve there are many to be found, which for size, style of construction, and tastefulness of surroundings would do credit to the members of any white community of farmers.

One factor which operates strongly in the direction of improving buildings is the sense of security of individual tenure, resulting from the subdivision of reserves and issue of location tickets protecting the individual's improvements against the common tenure of the reserve by the band.

Another factor towards the improvement of stables is the growing sense of the value of stock and the recognition of the necessity for increased care in handling the

greatly improved class of horses and of cattle which are now in the hands of many of the farming Indians.

In British Columbia the rancheries, which are constructed of a framework of heavy logs and posts inclosed by split cedar boards, with openings in the roofs in lieu of chimneys, and are tenanted in common by several families, are pretty well a thing of the past, excepting in the Kwawkewlth agency, and even in that district frame houses are becoming common. In the Fraser River, West and Northwest Coast agencies, where the Indians for the most part live in villages, the houses are commonly of a superior class and many both with regard to the style of architecture and the way in which the surroundings are beautified display no mean taste on the part of the owners. In many of the villages are to be found churches, school-houses, fire-halls, music-halls, &c.

In the Williams Lake, Kootenay and Kamloops-Okanagan agencies the houses are of log or hewn timber, and of varying degrees of quality.

In all the provinces the vagrant Indians in the midst of civilized surroundings, as also those who, far removed from civilization, support themselves by fishing, trapping and hunting, have comparatively poor and for the most part somewhat wretched dwellings in numbers of instances no great advance upon the teepee or wigwam.

The improvement just described is not alone gratifying as an evidence of general progress, but also on account of the influence exerted for good upon the health and morals of the Indians.

Education.

There has been little or nothing during the year in connection with education to call for particular comment.

It is gratifying to have the assurance contained in the report of the Indian Commissioner for Manitoba and the Northwest Territories that the recently adopted experiment, referred to last year, of establishing little colonies on some of the reserves of graduates from the schools, continues to be successful, and a careful perusal of the other reports herewith submitted will show indications not hitherto noticed of the fact that these pupils are beginning to exert an influence on the social tone of the reserve life.

Last year there was an increase of three in the number of schools of all classes, but during the year under review there has been a decrease of seven, leaving the aggregate number 283. This result has been arrived at by the closing of thirteen day schools in various localities, the opening or re-opening of eight, and the amalgamation of two boarding schools with others.

Of the 283 schools, 100 are conducted under the auspices of the Roman Catholic Church, 87 in connection with the Church of England, 41 are conducted by the Methodists and 14 by the Presbyterian Church, while 41 are undenominational.

Of these 221 are day, 40 are boarding schools, and 22 are industrial institutions.

While the aggregate number of schools has decreased, it is satisfactory to note the number of pupils on the respective rolls has increased. The aggregate enrolment was 9,669, of whom 5,177 were boys and 4,492 girls. This as compared with the preceding year shows an increase of 47 male and 46 female pupils.

The foregoing figures do not include the whole number of Indian children under the scholastic influences, as there are others, especially in the older provinces, who attend the day schools of white communities in the vicinity of their reserves.

Morality.

If abstinence from offences against the laws of the country, and especially from the commission of serious crime, be taken as a criterion, then the morality of the Indians will certainly not suffer from comparison with that of the rest of the community, and during the year they have more than sustained the enviable reputation that they had already earned.

In considering other aspects of morality, allowance must be made for the fact that even among bands longest under missionary and other elevating influences there seems to be still, although not always avowed, a hereditary pagan influence at work. Attachment to old tribal customs is often slumbering where least suspected until something occurs to give it expression.

Alcoholic intemperance, because of its immediate degrading and impoverishing effects, and on account of provoking and at the same time breaking down the power of resisting other vices, is probably the most dangerous to the Indians. The rarity of serious crime and growth of general prosperity are in themselves proof that it has no extended hold on them. The habitual and moderate use of stimulants common among other classes is, as a consequence of the provisions of the Indian Act relative to intoxicants, almost unknown among the Indians, nor is habitual excessive indulgence at all common.

Complete returns are not at the moment available, but from those immediately at hand, it may be stated that during the year there were 46 convictions for infractions of the provisions of the liquor clauses of the Indian Act secured in Ontario, 43 in Quebec, and 81 in Manitoba and the Northwest Territories.

A prevalent idea seems to be that an easy remedy can be found in severer legislative enactment, but in undertaking this it must not be forgotten that there is the danger of diminishing public sympathy, the lack of which greatly enhances the difficulties of enforcing already existing legislation.

During the year an appreciable and in some localities a marked advance in the direction of checking the evil has been made, and what is still more gratifying is that there are perceptible indications of a growth of Indian public sentiment against intemperance.

Lands.

Surrendered surveyed Indian lands to the extent of 103,461·08 acres were sold during the fiscal year and realized the sum of $160,519.90.

During the same period 317 patents were issued and recorded, 45 returns of issued patents were sent to the registrars of counties and districts concerned, and 4 returns showing lands patented within the province were sent to the provincial secretary of Ontario.

Under the authority of an order of His Excellency in Council, the islands in the River St. Lawrence opposite the townships of Pittsburgh, Leeds, Lansdowne, Escott, Yonge and Elizabethtown, to the number of 520 were placed on the market at the upset prices placed upon them by Mr. Walter Beatty, D.L.S., in September, 1901, and full particulars widely published. Of these 214 were disposed of for an aggregate amount of $22,605.

The islands on the west coast of the Saugeen Indian peninsula, county of Bruce, numbering 240, were in February last placed in the hands of Mr. W. J. Ferguson, Indian agent, Wiarton, for sale at upset prices.

Under the authority of an order of His Excellency in Council, the Ocean Man and Pheasant Rump Indian reserves at Moose Mountain, and the Chacastapasin reserve (with the exception of Sugar island) near Prince Albert, were advertised for sale in quarter sections by public competition.

The whole of the two first mentioned reserves (less three small graveyards) comprising 46,604·31 acres was disposed of for the aggregate sum of $58,145, and all of the last mentioned sold (with the exception of a single quarter section) the area being 14,699·63 acres, and the amount realized $25,473.04; the proceeds being placed to the credit of the respective bands which owned the lands.

Minerals.

During the year a number of applications were received for the baser minerals on claims in the Garden River and Batchawana districts, and four mineral claims were purchased.

Location Tickets.

Location tickets granting title, under the Indian Act, to individual Indians for land on their reserves were issued during the past year to the number of 144, bringing the number now current up to 1,121.

The Indians of the Fort William, Christian Island and Mud Lake bands respectively, had their reserves subdivided and received location tickets.

Under the provisions of section 11, added to the regulations for the disposal of Indian lands, leases were issued to white men at the request of the Indian locatees, to the number of 108. At the close of the year there were 1,085 leases current.

The number of timber licenses renewed during the year and current at its close was 22.

Berths at Parry island, Whitefish lake and Wahnapitai were not renewed and those at Lower French River, Mississaga and Betsiamits reserves are vacant.

Surveys.

In Ontario the following work has been done:—

The survey and plans of the islands in the Georgian bay, south of Moose Deer point, under the control of this department, have been completed.

The similar work, but on a much smaller scale, of surveying the islands off the west coast of the Saugeen peninsula, in Lake Huron, has also been completed.

A small portion of the Indian holding No. 66, adjoining the village of Roseneath in the Alnwick reserve, county of Northumberland, was surrendered, and has been subdivided into village lots, to be sold for the benefit of the Indians.

The townplot at Meldrum bay, Manitoulin island, has been surveyed and subdivided into village lots, to be placed in the market and sold for the benefit of the Indians.

A survey was made to ascertain the correct limits of George E. Fisher's location in the Caradoc reserve, county of Middlesex.

The western boundary of the Cape Croker reserve, county of Bruce, has been re-surveyed and posted, and a road laid out on the same reserve between lots 3 and 4, concessions 1, 2 and 3.

An examination was made, and levels taken to ascertain the extent of the damage which would be done if the level of the waters of Black lake and Black river in the Gibson reserve, county of Muskoka, were raised as proposed.

In Quebec the examination of certain water-courses on the easterly and southerly boundaries of the Caughnawaga reserve, was made to ascertain what works of drainage were required.

In Nova Scotia a survey of a boundary of one of the Afton reserves, Antigonish county, was made at the joint expense of the department and the adjacent white owner.

In Manitoba and the Northwest Territories the following surveys have been made:

A timber berth, containing 13·7 square miles, for the Onion Lake agency, Sask., has been surveyed.

Ninety-six farm lots of eighty acres each, have been laid out in the southeast part of Peepeekesis' reserve, No. 81, in the File hills, Assa., for the purpose of locating Indian ex-pupils thereon.

The boundaries of Little Black Bear, Star Blanket, Okanase and Peepeekesis' reserves in the File hills, Assa., have been re-traced, and the posts and mounds renewed. The line between the Muscowpetung and Pasquah reserves, Assa., has been re-surveyed and posted.

The north part recently surrendered, of the Stony Plain reserve, near Edmonton, Alta., has been subdivided into sections for the purpose of being sold for the benefit of the Indians.

The east and north boundaries of the Standing Buffalo reserve, No. 78, Assa., have been re-traced, and the posts and mounds renewed.

The re-survey of the boundaries of the Nut Lake reserve, No. 90, Sask., and the survey of an addition thereto have been made.

The surveys of Indian reserves in the new Treaty No. 8, commenced last season, are being continued.

In British Columbia the following works have been undertaken:—

An examination of the Cowichan river, Vancouver Island, in connection with complaints made by whites regarding weirs placed in the river by Indians, was made and an examination of the same river to ascertain the extent of the works necessary to prevent the serious damage caused by the river overflowing its banks at certain points, and the said works have been commenced.

The re-survey of a disputed boundary of a reserve situated at Cowichan lake, Vancouver Island, was completed.

The department has continued the surveys of boundaries of Indian reserves in the Osoyoos district and the Similkameen valley.

Financial.

At the close of the fiscal year the capital of the Indian Trust Fund, which at the end of the preceding year amounted to $3,941,393.77, had increased to $4,045,945.86.

Collections aggregate $187,302, and disbursements $276,749.15.

The amount expended from the Consolidated Revenue Fund voted by parliament for the purposes of the department, was $1,057,130.55. On June 30 last, the balance to the credit of the Indian Savings Account, for the funding of the annuity money and earnings of pupils at industrial schools was $31,803.71, deposits and interest during the year having reached the sum of $16,198.28, withdrawals to the extent of $9,048.66 having been made during the same period.

I have the honour to be, sir,

Your obedient servant,

JAMES A. SMART,
Deputy Superintendent General of Indian Affairs.

REPORTS

OF

SUPERINTENDENTS AND AGENTS

PROVINCE OF ONTARIO,
CHIPPEWAS OF BEAUSOLEIL,
PENETANGUISHENE, August 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report and statistical statement showing the condition and progress of the Indians under my supervision during the year ended June 30, 1902.

Reserve.—The reserve of this band is located on Christian island, situated at the southerly end of Georgian bay, on the steamboat route from Collingwood to Parry Sound, and from Collingwood to Midland and Penetanguishene.

Tribe.—These Indians are called the 'Chippewas of Beausoleil,' because they formerly resided on Beausoleil island.

Population.—The population is the same as last year, being two hundred and thirty; there were no births and no deaths or other changes.

Health.—The health of these Indians has been good, no contagious diseases of any kind being prevalent. All the young members of the band were vaccinated last spring.

Resources and Occupations.—The Indians of this reserve live largely by agricultural pursuits. The members of this band have exceptional means of earning a livelihood. The older members work their farms, which return them good results for their industry, the land being fertile. The younger men engage during the summer months as guides to tourists, for which they receive good pay. In winter wood is cut on their locations for sale to steamers, so they are engaged the year round and consequently make a good living, and are becoming very comfortable.

Stock.—The cattle on this reserve are by far the best in the district. Some four years ago the department purchased for them a thorough-bred polled Angus bull from Mr. William Stewart, of Lambton county, and the results have been entirely satisfactory and encouraging, the Indians now having a splendid herd of cattle, in which they take great pride.

Buildings.—The houses are becoming more comfortable and are kept neat and clean; all sanitary regulations being strictly observed.

Education.—There is a good school on the reserve taught by the Rev. Mr. Evans, who is most painstaking and earnest. Pupils who attend regularly make splendid progress.

Religion.—There are two churches on this reserve, one Methodist and one Roman Catholic. The services in each are well attended. The services in the Methodist church are conducted by the Rev. Mr. Evans twice each Sabbath.

Temperance and Morality.—The Indians are as a rule law-abiding and temperate, a case of intemperance very rarely coming under my attention. In this matter there is a marked improvement. The young men are certainly displaying sober and industrious habits.

I have, &c.,

CHAS. McGIBBON,
Indian Agent.

PROVINCE OF ONTARIO,
CHIPPEWAS OF GEORGINA AND SNAKE ISLAND,
VIRGINIA, July 7, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit herewith my annual report and statistical statement for the year ended June 30, 1902.

Reserve.—The reserve of this band is situated in the southern waters of Lake Simcoe, Georgina island being five miles from Jackson's point, a summer resort, where many people spend the summer months each year. Snake island is twelve miles to the west and quite near Morton's park, another summer resort. The reserve contains three thousand four hundred and ninety-seven acres and is a good clay soil.

Tribe.—These Indians are nearly all Chippewas.

Vital Statistics.—This band numbers one hundred and fifteen, the same as last year, consisting of thirty-five men, thirty-five women, twenty-three boys and twenty-two girls, there having been four deaths, two births, and two taken into the band by adoption.

Health and Sanitation.—The health of the band has not been as good as in previous years. Consumption is doing its deadly work, notwithstanding that all sanitary precautions are fairly well observed, most of the families taking as much pains to clean up their houses and yards as white people. There has been no contagious disease other than consumption during the past year.

Resources and Occupations.—Farming is the chief occupation of some of the Indians, but some of them have no teams and do not farm much. Those that farm get along the best. Some work out, others make baskets, others oars and paddles, the women making fancy work. Some old Indians dig ginseng root and burdock, which they sell to druggists.

Buildings.—The buildings are all of wood. There are thirteen frame houses, three frame barns, and the rest are built of logs, one frame house having been built during the past year and many other improvements made to other buildings.

Stock and Implements.—The stock is pretty good on the whole. There are some good horses and some good cows and some not very good. A fine Jersey bull was poisoned last summer, which is not replaced yet. The horses are getting less in number, as some of the Indians cannot replace them when they get old and useless and they are too apt to sell the colts. The implements are very good and sufficient in number. There is a horse-power threshing-machine in good repair.

Education.—There is a good school on Georgina island taught at present by Mr. H. L. Tweed. He takes a deep interest in the moral as well as the educational welfare of the Indians.

Religion.—There is one Methodist church on the reserve. Two services are usually held each Sabbath, one conducted in the Indian language and one in English. The services are well attended. The conduct of the Indians is exemplary when at these services. The church is kept in first-class order.

Characteristics and Progress.—Most of the Indians are law-abiding and industrious. The following are doing well: Alfred McCue, John E. Big Canoe, G. H. Charles, James and William J. Ashquabe, James Charles, Thomas Charles, Daniel Big Canoe and Thomas Port.

Temperance and Morality.—Most of the members of the band are never seen the worse of liquor and claim to be total abstainers. There is a lodge of Good Templars on the island. There are three or four of the Indians that will drink to excess if they get a chance.

General Remarks.—These Indians are intelligent and conduct their council and all other public meetings in an orderly and gentlemanly manner, discussing all matters freely before deciding them. The crops are not quite so good as last year, owing to the heavy rains.

I have, &c.,

JOHN YATES,
Indian Agent.

PROVINCE OF ONTARIO,
CHIPPEWAS OF NAWASH,
CAPE CROKER, July 29, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statistical statement for the year ended June 30, 1902.

Reserve.—There is only one reserve in the agency; it is situated in the extreme northeast portion of the township of Albemarle, in the county of Bruce. This reserve contains nearly sixteen thousand acres, about sixty per cent of which is good for cultivation.

Tribe.—These Indians are nearly all Chippewas.

Vital Statistics.—This band numbers three hundred and sixty-nine on the pay-list and about thirty non-treaty Indians, who reside on the reserve; on the pay-lists are one hundred and twelve men, one hundred and eighteen women, eighty-six boys and fifty-three girls. There have been seven births and twenty-one deaths. Two women came in by marriage and two went out by marriage, making a decrease of fourteen as compared with the census of last year.

Health and Sanitation.—The health of the Indians has been good except in the cases of consumptives; there have been a great many deaths on account of this disease; nearly all cases prove fatal. Every member of the band was vaccinated about the time of the small-pox scare recently. All sanitary measures are carefully attended to; the dwellings whitewashed and in most cases kept neat and clean and premises in good order, being kept free from rubbish and other refuse matter by burning it.

In their personal appearance the Indians are well dressed, neat and clean.

Resources and Occupations.—In agricultural pursuits this tribe continues to make steady improvement. About twenty-five families are working their holdings well and are doing fairly well. They have all the farming implements required.

A number of the young men work in saw-mills, loading vessels and rafting in summer, some working for white farmers. A number of the women make baskets, pick berries and gather ginseng-root for sale. There is a shingle-mill on the reserve manufacturing out of the dead and waste timber. The Indians have derived about $800 from this industry during the past six months. A new industry has started in the raising of sugar beets for the Wiarton factory; fifteen Indians have good commencements made; their beet crops look well.

The Indians have a good fishing reserve and annually catch about $4,000 worth of fish.

Stock.—They have a large number of very good horses and lately are accumulating a good many cattle, especially cows. They also raise a large number of hogs. The sheep are increasing, but are not numerous yet.

Education.—There are three schools on this reserve, all of which are making fair progress. The school-buildings are in good order and well equipped.

Religion.—The Indians attend divine service fairly well. They have two commodious churches: the Methodists, numbering about two hundred and thirty, have a stone church, while the Roman Catholics, numbering one hundred and twenty-four, have a frame building. Fifteen of the Indians are Anglicans, but they have no service on this reserve.

Temperance and Morality.—I am pleased to report that a large majority of this band are strictly temperate. There are still a few noted characters that on days of large gatherings outside get unscrupulous white men to procure them whisky, but on the whole there is and continues to be a decided improvement in this respect.

Regarding morality, the Indians continue to improve; there appears to be a steady and healthy change for the better.

Characteristics and Progress.—The industrious Indians are getting along well, their progress on the whole is fair, they got in a good crop this spring and the harvest promises an abundance. The summer has been very wet, but the weather has now turned fair, and if it continues good for harvesting, an abundant crop is assured. The department's policy, recently put in operation on this reserve, of allowing the individual Indians who are willing to work and improve their holdings and homes, to cut and sell limited quantities of timber under permit, the proceeds passing through the agent's hands to pay for the improvements of their homes by paying for material and work in constructing their houses and barns, and building wire fences, is now having a very beneficial effect in the appearance of this reserve and the comfort of the homes and surroundings, but it requires very great vigilance on the part of the agent and his forest guardian in guarding the proceeds and having it properly applied to the purpose intended. These Indians are now very proud of their improved properties and well pleased after things are settled up, but many of them would at the time like to get a chance to spend the money for living as they used to do while working at the timber.

The Indians' annual fall agricultural show has been held each fall for the past five years. It has been fairly successful under existing circumstances. It creates a good deal of healthy rivalry among the Indians in competing with each other in the products of their labour. It is about the only big day that they all participate in for outdoor sport and amusement.

The Indians last winter joined themselves with the Farmers' Institute of North Bruce. A very successful meeting of the institute was held in their hall, and the delegates expressed their delight in having met with this band, and were surprised at the intelligence of the Indians in matters relating to agriculture.

I have, &c.,

JOHN McIVER,
Indian Agent.

PROVINCE OF ONTARIO,
CHIPPEWAS OF RAMA,
ATHERLEY, August 21, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report, with statistical statement, showing the condition and progress of the Indians of this agency, for the year ended June 30 last.

Reserve.—The Rama reserve is situated on the eastern shore of the beautiful and picturesque Lake Couchiching. It comprises two thousand acres of fairly good land for agricultural purposes.

Tribe.—The Indians of this band belong to the Chippewa tribe.

Vital Statistics.—The population is two hundred and twenty-eight, composed of fifty-seven men, seventy-one women and one hundred children. There were ten births, and two Indians joined the band; there were six deaths, and thirteen Indians left the band, making a decrease of seven since my last report. They have sustained a great loss in the death of their late chief, John Kenice. He was a man of excellent character, always going before his people, encouraging and instructing them by his good example.

Health.—The general health of the Indians has been good during the past year, no epidemic prevailing among them.

Resources and Occupations.—The resources of this band are exceptional. A great number gain a livelihood entirely from farming; others find employment in the lumber camps, act as guides to American tourists at lucrative wages, and engage in the chemical works at Longford. The works being close, paying good wages, and affording steady employment, are a great boon to the reserve. The women find ready sale for fancy work in Orillia, selling to Mr. Goffatt over $1,000 worth of goods.

Buildings, Stock and Farming Implements.—The houses on this reserve are principally frame, and are kept neat and clean and in good repair. Barns and stables are mostly frame, and are kept in a fair state of repair.

The stock is of fair breeding.

The Indians are fairly well supplied with farming implements.

Education.—The Indian children are making good progress under the careful instruction of their teacher, Rev. J. Laurence. The majority of the parents co-operate with him by sending their children regularly to school.

Religion.—These Indians are principally Methodists. Their church is a credit to the reserve, being built of stone and finished in modern style. Service is conducted every Sunday morning and evening by Rev. J. Laurence, and a warm interest is shown in spiritual affairs.

Temperance and Morality.—A few of the Indians are addicted to strong drink and will indulge freely when they get an opportunity, and I regret to say they can always find unscrupulous whites who will procure it for them. During the year I had fourteen prosecutions for violation of the liquor law, and made convictions in each case. I trust that the prosecutions will have a salutary effect.

I have, &c.,

D. J. McPHEE,
Indian Agent.

PROVINCE OF ONTARIO,
CHIPPEWAS OF SARNIA,
SARNIA, September 12, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and tabular statement for the year ended June 30, 1902.

Reserves.—The Indians in my agency are the Chippewas of Sarnia, residing on three reserves: the Sarnia reserve situated on the banks of the river St. Clair, just south of the town of Sarnia; the Kettle and Stony Point reserves, on the shores of Lake Huron, and all in Lambton county. The three reserves comprise about nine thousand seven hundred acres.

Vital Statistics.—The population is four hundred and thirty, consisting of one hundred and twenty-nine men, one hundred and twenty-five women and one hundred and seventy-six children and young people under twenty-one years of age. There were four births and sixteen deaths.

Health and Sanitation.—The health of the Indians on these reserves was fairly good this last year. No contagious disease has broken out among them. Sanitary measures are carefully observed; some of the houses are kept exceptionally clean.

Education.—There is one day school on the Sarnia reserve, taught by Miss Alice Matthews, and also one on Kettle Point reserve, taught by Miss Ethel Jacobs. The attendance at these schools is not as good as might be desired, as the parents are somewhat careless in this regard.

Religion.—There are two churches on the Sarnia reserve, an Anglican and a Methodist, where services are held regularly. There is also a church on each of the Kettle and Stony Point reserves, but service is held at Kettle Point only. The Indians attend church fairly well.

Characteristics and Progress.—The Indians on these reserves live chiefly by farming, and some make a good deal of money by fishing. The crops looked well at the beginning of the season, but on account of so much rain there has been considerable loss.

I have, &c.,

A. ENGLISH,
Indian Agent.

PROVINCE OF ONTARIO,
CHIPPEWAS, MUNSEES AND ONEIDAS OF THE THAMES,
DELAWARE, July 29, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report concerning the three bands included in this agency for the year ended June 30, 1902.

ONEIDAS OF THE THAMES.

Reserve.—The Oneida reserve is situated in the township of Delaware, Middlesex county. It contains five thousand two hundred and fifty acres of choice farming land.

Tribe.—These Indians are a branch of the Oneida tribe, one of the confederacy known as the Six Nations.

Vital Statistics.—The population consists of two hundred and fifty-one men, one hundred and ninety-seven women and three hundred and thirty-one young people under twenty-one years of age, making a total of seven hundred and seventy-nine.

Health.—The health of these Indians has been fairly good during the year. No epidemic broke out. Consumption is the most prevalent disease.

Resources and Occupations.—The principal resources are farming and stock-raising. A considerable amount of money is earned by these Indians from pulling flax among the whites and from employment in connection with canning factories. A good deal of money is also realized from basket-making and mat-making.

Buildings, Stock and Farming Implements.—The dwelling-houses are principally small frame or log buildings. The barns and horse-stables are fairly good.

The stock is of average breeding.

These Indians are fairly well supplied with farming implements.

Education.—There are two day schools on this reserve. The attendance has been good and the progress made by the children during the year has been very satisfactory.

Religion.—There are three churches upon this reserve—two Methodist and one Anglican. The church services are well attended and the Indians take a lively interest in religious affairs. The missionaries are doing excellent work.

Characteristics and Progress.—Generally speaking, the Oneida Indians are industrious and law-abiding. They are making progress.

Temperance and Morality.—It is to be regretted that some of the Indians occasionally use intoxicating liquors, and the marriage law is sometimes not observed as well as it should be.

CHIPPEWAS OF THE THAMES.

Reserve.—This band occupies a part of the Caradoc reserve, comprising about eight thousand seven hundred and two acres, which for the most part is a beautiful, undulating, fertile tract of country.

Tribe.—These Indians belong to the Chippewa tribe.

Vital Statistics.—The population consists of one hundred and forty-three men, one hundred and ten women and two hundred and twenty-three young people under twenty-one years of age, making a total of four hundred and seventy-six.

Health and Sanitation.—Sanitary precautions have been fairly well observed. No epidemic broke out during the year. There is more mortality from consumption than from any other disease.

Resources and Occupations.—The resources of this band are principally farming and stock-raising. A good deal of money is earned by these Indians from pulling flax among the whites and from employment in connection with canning factories.

Buildings and Stock.—The barns and stables, though generally small, are in fairly good repair. The houses are principally small log or frame buildings.

Cattle and horses are fair.

Education.—There are three day schools on this reserve. The schools are all well equipped. The attendance has been fair during the year.

Religion.—These Indians take a lively interest in religion. The church services are well attended. A little more than half the population adheres to the Methodist Church and the remainder to the English Church.

Characteristics and Progress.—These Indians are usually law-abiding and fairly industrious.

Temperance and Morality.—They are usually temperate. The marriage law, I regret to say, is not observed as well as it should be.

Munsees of the Thames.

Reserve.—This band occupies two thousand and ninety-eight acres, a portion of the Caradoc reserve.

Tribe.—These Indians belong to the Munsee tribe, the only band of this tribe residing in Canada.

Vital Statistics.—The population of this band consists of forty-two men, twelve women and sixty-seven young people under twenty-one years of age, making a total of one hundred and twenty-one.

Health and Sanitation.—The health of these Indians has been fairly good. No epidemic broke out during the year. Sanitary measures have been fairly well observed.

Resources and Occupations.—The resources of this band are farming and stock-raising.

Buildings, Stock and Farming Implements.—The buildings are not as good as could be desired.

The stock is fair.

These Indians are fairly well supplied with farming implements.

Education.—There is one day school on this reserve. The attendance has been fair and the children have made fair progress in their studies.

Religion.—There are two churches on the reserve—one Methodist and one Anglican. Services are held in these regularly and are well attended.

Characteristics and Progress.—These Indians may be considered as fairly industrious. Their progress is slow.

Temperance and Morality.—These Indians are generally temperate and fairly moral.

I have, &c.,

S. SUTHERLAND,
Indian Agent.

PROVINCE OF ONTARIO,
GORE BAY AGENCY,
GORE BAY, July 14, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report concerning the Indians of my agency for the year ended June 30, 1902.

COCKBURN ISLAND BAND.

Reserve.—This reserve is situated on the north side of Cockburn island, which lies immediately west of Manitoulin island. It has an area of about one thousand two hundred and fifty acres.

Tribe.—These Indians belong to the Ojibbewa and Ottawa tribes.

Population.—Fifty-eight is the population of this band.

Health and Sanitation.—The health of the Indians is generally good, no epidemic having made any depredation in the band. Sanitary conditions and regulations are observed and appreciated.

Resources and Occupations.—Forest, farm and stream are the resources of these Indians. They farm on a small scale. Their principal occupation is working in the lumber camps and making ties in winter and loading vessels in summer.

Buildings, Stock and Farming Implements.—Their buildings are neat, clean and comfortable, and fairly well furnished. They have very few cattle and very little stock of any kind or farm implements.

Education.—There is no school on this reserve.

Religion.—These Indians belong to the Roman Catholic faith and they have a church in which they worship under the guidance of the visiting missionary. They appear to take much interest in religious matters and seem to be altogether a very intelligent band.

Characteristics and Progress.—They are both steady and industrious and are making a comfortable living.

Temperance and Morality.—The absence of liquor on the island accounts in some measure, and being isolated from any village, these Indians are exceptionally temperate, and in morality are above the average.

General Remarks.—These Indians are industrious, sober and moral, and intend paying more attention to farming in the future.

WEST BAY BAND.

Reserve.—This reserve lies in the township of Billings, at the head of Honora bay, Manitoulin island. Over thirteen square miles are within its limits.

Tribe.—These Indians belong to the Ojibbewas and Ottawas of Manitoulin island.

Population.—The population of this band is three hundred and thirty-six.

Sanitation.—The sanitary measures recommended by the department have been mostly carried out and the houses of the Indians are comfortable and clean.

Resources and Occupations.—Their chief occupation is farming and they are making progress. They also work in the lumber camps in winter and load vessels in summer. Sugar-making and berry-picking are also sources of revenue.

Buildings.—Their buildings are mostly constructed of logs. Their dwellings and outbuildings are well kept, neat and comfortable, and the houses are neatly furnished. The Indians are making more progress in this band in farming than any other band under the supervision of this agency, and are getting into the way of using the machinery necessary for that purpose, and their farms are fairly well stocked with horses and cattle.

Education.—The school is well attended and fair progress is being made.

Religion.—These Indians are all Roman Catholics. They have a fine church on the reserve under the auspices of the Wikwemikong priests and are faithful adherents to their faith.

Characteristics and Progress.—These Indians are law-abiding and industrious. Their chief is an energetic man and honest, he treats all subjects fairly and with good judgment, and looks carefully after the best interests of his band.

Temperance and Morality.—Along the lines of temperance and morality this band will compare favourably. Very few complaints are made and its standing is very satisfactory.

General Remarks.—These Indians are progressive and take a great deal to agriculture and education. Their chief also appears interested in having his band advance along both of these lines, and his advice and opinion is much respected.

Obidgewong Band.

Reserve.—This reserve is located on the west shore of Lake Wolesley, Manitoulin island. The area is four hundred acres.

Tribe.—These Indians are Ojibbewas and Ottawas.

Population.—This is the smallest band in the agency, being composed of seven persons.

Health and Sanitation.—The health of these Indians has been good and sanitary measures conformed to.

Resources and Occupations.—The members of this band depend largely on the soil for their maintenance. They also load vessels and work in camps in winter, which in all makes them a comfortable living

Buildings, Stock and Farm Implements.—Their buildings are neat and comfortable and fairly well furnished. They have very little stock or farm implements.

Education.—There is no school on this reserve.

Religion.—These Indians are pagans.

Characteristics and Progress.—They are law-abiding and make a good living.

Temperance and Morality.—They are moral and temperate in their habits as a band.

General Remarks.—These Indians although few in number are thrifty and will compare very favourably with any of the larger bands in making a comfortable living.

Sheshegwaning Band.

Reserve.—This reserve is located in the northeast part of the township of Robinson, Manitoulin island. Its area is about five thousand acres.

Resources.—Farming is the chief resource of this band.

Tribe.—These Indians are another division of the Ojibbewas and Ottawas of Manitoulin island.

Population.—This band numbers one hundred and sixty-two.

Health and Sanitation.—The health of these Indians has been fair during the past year; there has been no epidemic amongst them. They keep themselves and premises

clean and observe all precautions prescribed by the department as to sanitary conditions.

Occupations.—Farming is the chief occupation : they farm quite extensively, cultivating the land and raising stock, they make a fair showing. They also work cutting logs and making ties in winter and loading vessels in the summer-time.

Buildings, Stock, &c.—Their buildings are mostly of log, but are neat and clean and part of them well furnished. There are two organs in the village. They also have quite a number of stock—cattle, horses and pigs—which are well taken care of.

Education.—There is a school here, but there has been no teacher for the last two years.

Religion.—Most of these Indians are Roman Catholics. They have a good church, which is conducted by the Wikwemikong missionaries ; the services are attended to well.

Characteristics and Progress.—These Indians are law-abiding and are making progress. Their condition is very favourable in every way.

Temperance and Morality.—These Indians are all that can be expected of them.

General Remarks.—The Indians of this band are beginning to look better about farming and are getting more interested.

There are several frame dwellings now on this reserve. One of them is occupied by David Sampson and one by his brother, Matthew Sampson, who are both prosperous farmers.

The members of this band are thrifty and are generally supplied with money.

I have, &c.,

JAMES H. THORBURN,
Indian Agent.

PROVINCE OF ONTARIO,
MANITOWANING AGENCY,
MANITOWANING, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report concerning the Indians of this agency for the year ended June 30, 1902.

WHITEFISH RIVER BAND.

Reserve.—The reserve of this band is situated near the mouth of the Whitefish river on the north shore of the Georgian bay. It contains an area of about ten thousand six hundred acres.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—This band has a population of ninety-three, consisting of twenty-three men, twenty women and fifty children. During the year there were four births and one woman joined the band by marriage, and there were two deaths, making a total increase in the number of persons comprising this band of three for the year.

Health and Sanitation.—The health of these Indians for the past year has been good. No contagious disease has visited the reserve and all necessary precautions have been observed in respect to cleaning and whitewashing their dwellings and outbuildings.

Resources and Occupations.—A large portion of the land on this reserve is suitable for agriculture; the remainder is woodland. The occupations engaged in by these Indians are: farming, lumbering, hunting, berry-picking, fishing, basket-making and sugar-making.

Buildings, Stock and Farming Implements.—Their buildings are of log and frame construction and are kept in a good state of repair. Stock is well cared for, and the Indians have all the farm implements they require.

Education.—There is one day school on this reserve. Mr. S. H. Ferris is in charge, and under his tuition the children are making satisfactory progress.

Religion.—These Indians are of the Church of England and Roman Catholic persuasions.

Characteristics and Progress.—These Indians are mostly quite industrious, law-abiding, and are steadily improving.

Temperance and Morality.—The laws of temperance and morality are well observed by this band.

Point Grondin Band.

Reserve.—This reserve is located east of Collins Inlet, on the north shore of Georgian bay. It contains an area of about ten thousand one hundred acres.

Tribe.—These Indians are Ojibbewas.

Vital Statistics.—The population of this band is fifty-five, consisting of eleven men, twenty-one women and twenty-three children. During the year there were three births, there were five deaths and two women left the band through marriage, making a total decrease of four in this band for the year.

Health and Sanitation.—The general health of these Indians is good and the sanitary condition of their dwellings quite satisfactory.

Resources and Occupations.—The resources of this reserve are timber, agriculture and fishing. The Indians garden, fish, hunt, pick blueberries in the summer, and work in the lumber camps in winter.

Buildings, Stock and Farming Implements.—They have very comfortable log dwellings, have very little stock and but few farming implements.

Education.—They have no school on the reserve, their children attend school at Wikwemikong.

Religion.—The majority of the Indians are Roman Catholics, and are spiritually ministered to by the visiting missionaries from Wikwemikong.

Characteristics and Progress. They are steady and industrious, and are getting along as well as can be expected.

Temperance and Morality.—Nothing can be said to their detriment on these scores.

Whitefish Lake Band.

Reserve.—The reserve of this band is situated about twelve miles from Sudbury, on the Canadian Pacific railway, where there is a station called Naughton. It contains an area of forty-three thousand seven hundred and fifty-five acres.

Tribe.—These Indians are of the Ojibbewa tribe.

Vital Statistics.—This band has a population of one hundred and sixty, consisting of thirty-six men, forty-six women and seventy-eight children. During the year there were ten births, there were four deaths and one woman left the band through marriage, making a total increase of five in the population of this band for the year.

Health and Sanitation.—The health of these Indians for the past year has been good, and, as a rule, they keep their dwellings in a sanitary condition.

Resources and Occupations.—The resources of these Indians are gardening and hunting. They garden on a small scale, fish, hunt, act as guides and work in the lumber camps.

Buildings, Stock and Farming Implements.—Nearly all their buildings are constructed of logs, and are kept in a fair state of repair.

They have very little stock, and but few farming implements.

Education.—They have two schools on this reserve—one at Naughton and the other at the village, a distance of about four miles from Naughton. Both schools are fairly well conducted, but the attendance is very small owing to the absence of a large number of the Indians who devote their whole time to hunting.

Religion.—These Indians are of the Roman Catholic and Methodist persuasions, with the former in predominance.

Characteristics and Progress.—They are industrious and of the average intelligence, but as yet are very indifferent to the advantages they might gain should they give their attention to agriculture.

Temperance and Morality.—These Indians generally are moral and temperate in their habits.

Tahgaiwinini Band.

Reserve.—These Indians have a reserve at Wahnipitae on the north shore of Georgian bay, but nearly all of the band reside on the unceded portion of the Manitoulin island, at and near Wikwemikong.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—This band has a population of one hundred and ninety-four, consisting of thirty-nine men, forty-six women and one hundred and nine children. During the year there were ten births, and three women joined the band by marriage, and there were seven deaths, making a total increase of six in this band for the year.

Health and Sanitation.—The health of these Indians for the past year has been generally good, with no unusual disease or epidemic to impair the normal state. Sanitary precautions have been satisfactorily observed.

Resources and Occupations.—The greater part of the reserve is woodland. The timber on it has been sold under license and a good return secured to the Indians by the department. General farming, lumbering, fishing and berry-picking are the chief pursuits of this band.

Buildings, Stock and Farming Implements.—The buildings of the Indians are mostly of logs. Their stock is the average quality and well cared for and they have all the farming implements they require.

Education.—The children of this band attend school at Wikwemikong.

Religion.—These Indians are all Roman Catholics.

Characteristics and Progress.—They are industrious, law-abiding and are making steady progress in farming.

Temperance and Morality—They are fairly temperate and moral in their habits.

Maganettawan Band.

The members of this band who reside within this agency number eighty-three. They live mostly at West bay, on the Manitoulin island, where they successfully farm and garden. In winter they find employment in the lumber camps. This reserve, together with the affairs of its Indians, is under the control of the Parry Sound superintendency.

Spanish River Band, Division No. 3.

The members of this band number three hundred and forty-six. They nearly all reside on the unceded portion of the Manitoulin island, where they successfully farm and garden. Their general measure of advancement is identical with that of the other Indians of the unceded portion of the Manitoulin island, with whom they are included in the agricultural and industrial statistics.

Sucker Lake Band.

Reserve.—The reserve of these Indians is principally situated in the fourth concession of the township of Assiginack, Manitoulin island. The area of the reserve is five hundred and ninety-nine acres.

Tribe.—These Indians belong to the Ojibbewa and Ottawa tribes.

Vital Statistics.—The population on this reserve is fourteen, consisting of four men, six women and four young people under twenty one years of age.

Health and Sanitation.—The health of these Indians has been good. They are clean and tidy, and have their homes comfortably furnished.

Resources and Occupations.—Farming is the only occupation engaged in by these Indians.

Buildings, Stock and Farming Implements.—Their buildings are all in good condition. Stock is well looked after, and they have an ample supply of farming implements to meet their requirements.

Education.—There is no school on this reserve, the children attending school at Wikwemikong.

Religion.—These Indians are Roman Catholics.

Characteristics and Progress.—These Indians are both intelligent and thrifty, and they are getting along well.

Temperance and Morality.—In these respects their conduct is excellent.

Sucker Creek Band.

Reserve.—The reserve of these Indians is situated in the northern part of the township of Howland, Manitoulin island, about four miles from the town of Little Current. It has an area of one thousand six hundred and sixty-five acres.

Tribe.—These Indians belong to the Ojibbewa and Ottawa tribes.

Vital Statistics.—This band has a population of one hundred and one, consisting of twenty-seven men, thirty-one women and forty-three children. During the year there were three births and one woman joined the band by marriage, and there were three deaths, making an increase of one in this band for the year.

Health and Sanitation.—There was an outbreak of small-pox on this reserve last winter, and quarantine regulations were established over the Indians for forty-five days. There were no deaths from the disease. The Indians are now in good health, have all been vaccinated, and have their dwellings in a sanitary condition.

Resources and Occupations.—They engage in general farming and stock-raising, and find employment in getting out timber and loading vessels.

Buildings, Stock and Farming Implements.—The buildings on this reserve stand well in comparison with those in other farming districts. The farming implements are of the latest pattern, and the system of agriculture is as good on the average as that of the regular Canadian farmer. The Indians are improving their stock from year to year, for which they find a ready cash market with outside drovers.

Education.—The children can nearly all read and write; they are quick to learn, and attend school regularly.

Religion.—The Indians of this band are nearly all adherents of the Church of England. They attend well the church services, which are held in the school-building on the reserve every week by the Church of England missionary from Little Current.

Characteristics and Progress.—The Indians of this band have in no way deteriorated since my last report. They are industrious, and the great attention paid to agriculture is the chief reason for the progress shown by them.

Temperance and Morality.—A few of the members of this band are addicted to strong drink, but on the whole they are fairly temperate and moral.

Sheguiandah Band.

Reserve.—This reserve lies in the northwestern part of the township of Sheguiandah. It contains an area of five thousand one hundred and six acres.

Tribe.—These Indians belong to the Ojibbewa and Ottawa tribes.

Vital Statistics.—The population of this reserve is eighty-seven, consisting of twenty-seven men, twenty women and forty children. During the year there was one birth and one woman joined the band by marriage, and there were two deaths, which leaves the band with exactly the same population as last year.

Health and Sanitation.—This band was visited with an outbreak of small-pox early last winter. There were seven cases in all, and quarantine regulations were promptly established over the whole reserve. There were no bad results from the disease. The Indians are all in good health, have all been vaccinated, and have their dwellings in a satisfactory condition from a sanitary point of view.

Resources and Occupations.—The principal resource of this reserve is farming. Sugar-making, basket-making and berry-picking are also engaged in at different seasons of the year.

Buildings, Stock and Farming Implements.—The buildings of these Indians are comfortable and fairly well furnished. Their stock is well cared for, and they have what farm implements are required.

Education.—The school on this reserve is under the supervision of the Church of England. It is competently conducted, and the children are making fair progress in their studies.

Religion.—These Indians are nearly all adherents of the Church of England. They are devout and orderly in their demeanour. Their church is a credit to the reserve, and they are regular in their attendance at service.

Characteristics and Progress.—These Indians may be said to be progressing. They are intelligent, law-abiding and well behaved.

Temperance and Morality.—They are both moral and temperate in their habits.

South Bay Band.

Reserve.—This reserve is a portion of the unceded part of Manitoulin island, about twelve miles south of Manitowaning.

Tribe.—These Indians belong to the Ojibbewa and Ottawa tribes.

Vital Statistics.—This band has a population of sixty-six, consisting of thirteen men, nineteen women and thirty-four children. During the year there were two births and one death, making an increase of one in this band for the year.

Health and Sanitation.—The health of these Indians for the past year has been good. Sanitary precautions have been observed, all of their dwellings have been thoroughly cleaned and whitewashed.

Resources and Occupations.—The chief resource of these Indians is agriculture. They farm, fish in summer and take out timber and work in the lumber camps in the winter.

Buildings, Stock and Farming Implements.—Their dwellings are neatly constructed and are clean and comfortable.

Their stock is well cared for, and their supply of farm implements ample for their requirements.

Education.—These Indians have a good day school on the reserve. It is competently conducted and the children are making very satisfactory progress in their studies.

Religion.—These Indians are all Roman Catholics.

Characteristics and Progress.—The majority of these Indians are industrious and are getting along well.

Temperance and Morality.—They are moral and fairly temperate in their habits.

Indians of Manitoulin Island, Unceded.

Reserve.—This reserve comprises the eastern end of the Manitoulin island, east of the township of Assiginack. It contains an area of one hundred and five thousand three hundred acres.

Tribe.—These Indians belong to the Ojibbewa and Ottawa tribes.

Vital Statistics.—They number about seven hundred and thirty-three.

Health and Sanitation.—The health of these Indians for the past year has been fairly good ; no contagious disease, other than consumption, has visited the reserve. Several families are afflicted with consumption, due to hereditary causes. All necessary precautions have been taken in respect to cleaning premises. The vaccination of all adults and children has been attended to

Resources and Occupations.—The resources are large tracts of good land, well adapted for agriculture, timber-land and fishing. These Indians are taking a very lively interest in farming and are progressing favourably. Last winter they took out twenty-five thousand cedar railway ties, ten thousand cedar posts, and two hundred and ninety-four cords of pulp-wood, all of which the department disposed of for them at a good price.

Buildings, Stock and Farming Implements.—Their buildings are of log and frame construction and are kept in good repair.

Their stock is of the average quality and well cared for.

They are equipped with the very latest styles of farming implements.

Education.—Unsurpassed facilities for education are within the reach of all the children on the reserve. The boys' and girls' industrial institutions, and boys' and girls' day schools at Wikwemikong, are conducted by a well qualified staff of teachers, and there is also a day school at Wikwemikongsing and Buswah village.

Religion.—These Indians are all Roman Catholics, and a large number of them take a great interest in their religious duties.

Temperance and Morality.—There are a few of the Indians in this band who are partial to strong drink, and they indulge at every opportunity, but the great majority of them are temperate. They are up to the average in morality.

I have, &c.,

C. L. D. SIMS,
Indian Agent.

[16]

Day School, Cape Croker, Ont.

PROVINCE OF ONTARIO,
MISSISAGUAS OF ALNWICK,
ROSENEATH, August 15, 1902.

The Honourable
The Superintendent General of Indian Affairs.
Ottawa.

SIR,—I beg to submit my report and statistical statement in connection with the above named Indians for the past year.

Reserve.—This reserve forms the central southern part of the township of Alnwick, in the county of Northumberland, and contains three thousand four hundred and eighteen acres and eighty-nine hundredths of an acre, including Sugar and Hickory islands in Rice lake. Of this about two thousand four hundred and ninety-eight acres are cleared and in a very good state of cultivation. About twelve hundred acres of the cleared land is rented to white tenants, while the greater part of the remainder is worked by the Indian locatees or under pasture. All the land on this reserve is very well adapted for farming purposes.

Tribe.—This band was formerly composed of Indians from Belleville, Kingston and Gananoque. Of the Belleville Indians there were one hundred and thirty, while the Kingston and Gananoque Indians numbered seventy souls. These two bands were gathered together and united in 1826 and 1827, by the Rev. William Case, on Grape island in the Bay of Quinte, where they remained for about eleven years, when they migrated to their present reserve.

Vital Statistics.—At the taking of the census a short time ago, this band numbered two hundred and thirty-four; four deaths have occurred since that time, leaving two hundred and thirty in all. During the year there were eight births and six deaths; three women have married into the band, while two women of this band have married members of the Mud Lake band. In all there has been an increase of three during the year.

Health and Sanitation.—At the present time the sanitary conditions of the band are excellent, with two exceptions of consumption. Three women have died since the spring census was taken. Excepting these cases of consumption, there has been little sickness, and marked advances are easily noticeable both in the cleanliness of the surroundings of the dwellings and in the dwellings themselves, which in a large number of cases will compare most favourably with the best of those of the white inhabitants of the surrounding country.

Resources and Occupations.—Many of the Indians have good success in farming and are doing well. There is but very little made in hunting and fishing.

Buildings, Stock and Farm Implements.—Nearly all the houses are frame and in general are kept in a good state of repair.

The Indians own a very large number of farming implements. They have five self-binders and one reaper.

Education.—The school is taught by Mr. C. B. Oakley, who is very anxious to promote the children as fast as possible, and those who can be induced to attend at all regularly are doing very well.

Characteristics and Progress.—Very many of the Indians are industrious and doing well and are improving their holdings by building good straight cedar fences.

Religion.—Nearly all these Indians are members or adherents of the Methodist Church and many attend services regularly. Mr. Oakley, their school teacher, preaches to them every Sabbath once or twice.

Temperance and Morality.—I regret to say that a number of these Indians will get liquor when ever they can, but many never taste it and could not be induced to do so on any account.

I have, &c.,

JOHN THACKERAY,
Indian Agent.

PROVINCE OF ONTARIO,
MISSISSAGUAS OF THE CREDIT,
HAGERSVILLE, August 18, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of the Mississaguas of the Credit reserve, for the year ended June 30, 1902.

Reserve.—The reserve is situated partly in the township of Tuscarora, county of Brant, and partly in the township of Oneida, county of Haldimand. It comprises six thousand acres, of which four thousand eight hundred are in the township of Tuscarora, and the remaining one thousand two hundred are in the township of Oneida. This reserve is adjacent to and lies to the south and east of the Grand River reserve. There is about twelve hundred acres of this reserve under lease to white tenants, the soil is very well adapted for agricultural purposes, gardening and fruit-growing.

Vital Statistics.—The population of the band is two hundred and forty-four; consisting of sixty-nine men, seventy-nine women, sixty boys, and thirty-six girls, a decrease of two since my last annual report.

Health and Sanitation.—The health of the Indians throughout the year was exceptionally good, and there is very little sickness in the band at the present time. Regarding sanitary matters I might say that during the past spring our health inspectors were very particular to see that the instructions of the department as to the removal of all objectionable accumulations were rigidly carried out, leaving the reserve in a clean and healthy condition.

Education.—There is in this agency, one good brick school-house, well ventilated with spacious play-grounds adjoining, and equipped with maps, books and general school furniture in a manner much superior to many of the puplic schools maintained by the whites.

The pupils are making satisfactory progress under the present teacher, Miss M. G. Boyle. Several pupils from this reserve are attending the high school in the village of Hagersville.

Religion.—The Indians on this reserve are nearly all members or adherents of the Methodist Church. There are two Methodist churches under the charge of Rev. C. G. F. Cole. Both are well attended. There seems to be a growing tendency among the Indians to attend divine service. The Seventh Day Adventists appear to have a few followers among the members of the band.

Characteristics and Progress.—The Indians of the band are industrious, law-abiding and very intelligent, and are steadily becoming self-supporting. Many of them have farms that will compare favourably with those of their white neighbours. The

labour of the Indian is in much demand among the farmers of the surrounding district, they also get ready work at the stone quarries in the village of Hagersville, which gives them quite an income.

Temperance and Morality.—These Indians are on the whole a temperate and moral people, but few indulge in alcoholic beverages, a few will occasionally indulge in excessive drinking when away from the reserve working for the fruit-growers of the Niagara peninsula.

Their morals are good as far as I am able to judge. No cases of immorality have been brought to my notice during the past year.

General Remarks.—All the members of this band appear to be happy and contented. All can speak, and nearly all can read and write the English language intelligently.

I have, &c.,

DANIEL J. LYNCH,
Indian Agent.

PROVINCE OF ONTARIO,
MISSISSAGUAS OF RICE AND MUD LAKES,
KEENE, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of Indian affairs in my agency for the year ended June 30, 1902.

RICE LAKE BAND.

Reserve.—The Rice Lake reserve is located on the north shore of Rice lake in the township of Otonabee, county of Peterborough. It contains about seventeen hundred and fifty acres of land, of which about seven hundred and seventy-five acres are cleared; about three hundred acres of this is under lease to white tenants, while the locatees cultivate the remainder of said cleared land.

Vital Statistics.—The total number shown by the present census is eighty, composed of twenty-two men, twenty-two women, and thirty-six young people under twenty-one years of age. During the past year there were two births and three deaths, a decrease of one since last report.

Health and Sanitation.—The health of the Indians, generally speaking, has been fairly good. The children have been vaccinated. Sanitary measures are well observed.

Resources and Occupations.—The resources of this band are trapping, gathering wild rice, and basket-making. Some go to the lumber camps in winter and to the drives in summer.

Buildings, Stock and Farming Implements.—The buildings on this reserve, with few exceptions, are frame, and are kept in a good state of repair. The stock is good, and the Indians have a good supply of agricultural implements.

Education.—The children on this reserve are now attending the white school, and the progress made by the scholars is very good.

Religion.—The members of this band are all Methodists; they have a nice little church in which they have service each Sabbath evening; also a Christian Endeavour meeting every week, in which some of the members of the band take quite an interest.

Temperance and Morality.—On the whole these people are law-abiding and well-behaved, although there are a few who indulge in strong drink occasionally.

Mud Lake Band.

Reserve.—This reserve is located on the shore of Mud lake, in the township of Smith, county of Peterborough. It contains about two thousand acres, of which about three hundred are cleared.

Vital Statistics.—The total number shown by the present census is one hundred and sixty-seven; composed of forty-six men, thirty-seven women, and eighty-four young people under twenty-one years of age. During the past year there were six births, six deaths, three joined the band by marriage, an increase of three since last report.

Health and Sanitation.—The health of these Indians has been very good, the children have been vaccinated, sanitary measures are well observed, whitewash is freely used, the houses present a clean and tidy appearance, and every precaution is taken to prevent contagion.

Resources and Occupations.—In agricultural pursuits these Indians are making steady improvement: a few of them are working all their holdings and are doing fairly well. A good many of them work in lumber camps in winter and get good wages.

Buildings, Stock and Farm Implements.—The buildings on this reserve are of log and frame, and are kept in good repair. The stock is fair indeed. Quite a number of the Indians are supplied with farm implements.

Education.—The members of this band in the past year have built a very nice hall of red brick, with school-room and council-room, all nicely seated; also a furnace in the basement, by which the building is nicely heated. The present teacher is an Indian. Very fair progress has been made by the scholars.

Religion.—The members of this band are all members or adherents of the Methodist Church. A minister comes to the reserve every Sabbath, and the Indians attend services very regularly.

Characteristics and Progress.—These people on the whole are industrious and appear to take a great interest in their homes.

Temperance and Morality.—The Indians here appear very honest and well-behaved, there being very little intemperance in the band.

I have, &c.,

WM. McFARLANE,
Indian Agent.

Province of Ontario,
Mississaguas of Scugog,
Port Perry, September 9, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I beg to submit my annual report of the Mississaguas of Scugog, for the year ended June 30, 1902.

Reserve.—The reserve, which is situated at the northern extremity of Scugog island, contains eight hundred acres of the best land on the island.

Vital Statistics.—The band now numbers thirty-six. There have been two deaths and no births. One death was from old age, the other from tuberculosis.

Health and Sanitation.—The general health of these Indians has been good. The houses and yards are in good sanitary condition. All garbage and filth is burned from time to time, and cellars cleaned and whitewashed.

Resources and Occupations.—The Indians have good fishing in the lake for maşkinonge and black bass, but this has ceased to be a means of obtaining money since the sale of these fish has been prohibited by Ontario law. There is also good trapping in the marshes and along the creeks, and they shoot a great number of ducks in season, as there are good feeding grounds near by. Some of the Indians farm their own land, but they impoverish the soil by selling all the grain and not even returning the straw as manure, since they keep very little stock.

Some of the men work for the whites on the farms near by, but they only work by the day. This could be made a source of considerable income to the Indians, as labouring men are scarce and well paid.

The Indian women are expert basket makers.

Buildings.—The condition of the buildings is generally improved. A new shed has been built at the church.

Stock.—There is but little stock and the quality is only ordinary.

Farming Implements.—The Indians are getting better implements and taking better care of them.

Education.—The children attend a school near by, but rather irregularly They are quick at learning and would make good progress if their parents insisted on their regular attendance.

Religion.—The Indians all attend their own Methodist church, of which most of the older ones are members.

Characteristics and Progress.—They are peaceable and have never been guilty of violence. They are honest, and although they sometimes overstep their incomes, when they can obtain credit, they never repudiate their debts.

There are signs of progress. A number have built themselves new houses, and there seems to be a growing desire for modern conveniences such as better farm implements, pumps, stone cellars, &c.

Temperance and Morality.—There has been a marked improvement in their sobriety during the last few years, until now only a few of the younger men indulge in intoxicants.

It might almost be said that immorality does not exist in this band.

I have, &c.,

A. W. WILLIAMS,
Indian Agent.

PROVINCE OF ONTARIO,
MORAVIANS OF THE THAMES
DUART, August 4, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report concerning the Moravians of the Thames for the year ended June 30, 1902.

Reserve.—This reserve is situated in the northern portion of the township of Orford, in the county of Kent, on the south side of the Thames river, and contains about three thousand and ten acres of good farming land.

Tribe.—This band of Indians is known by the name of the 'Moravians of the Thames' and originally belonged to the Delaware tribe.

Vital Statistics.—The population consists of eighty-four men, seventy-nine women, seventy-six boys and seventy girls, making a total of three hundred and nine persons. During the year there were eleven births and three Indians joined the band, and there were ten deaths, making a total increase of four. There are also thirty-four persons upon this reserve who are not members of this band.

Health and Sanitation.—The health of these Indians has been exceedingly good during the year, there was very little sickness of any kind. The vaccination of the Indian children is attended to every spring, houses are cleaned and well whitewashed with lime, and all refuse is gathered and burned.

Resources and Occupations.—The resources of this band are principally farming and stock-raising, especially hogs. A good deal of money is earned by working out for white people on their farms, also by basket-making, mat-making and fishing.

Buildings.—The buildings are chiefly small frame and log houses, most of them comfortable and fairly clean. One large new barn and two new houses have been built during the year. The outbuildings are receiving better attention than formerly.

Stock.—The stock is fairly good, improving yearly.

Farming Implements.—The implements used are good and modern.

Education.—There is only one school upon this reserve, situated near the centre within easy reach of all the children. It is kept open during the whole year and fair progress is being made.

Religion.—The spiritual needs of this band are looked after by the Moravian, Methodist and Anglican denominations, each having a church upon the reserve and all fairly well attended every Sabbath.

Temperance and Morality.—The Indians generally are moral and temperate; occasionally we hear of a case of intemperance, but the members of this band will compare favourably with their white neighbours.

I have, &c.,

A. R. McDONALD,
Indian Agent.

PROVINCE OF ONTARIO,
OJIBBEWAS OF LAKE SUPERIOR,
EASTERN DIVISION,
SAULT STE. MARIE, September 8, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my first annual report, being for the year ended June 30, 1902, of the several bands of Indians in this agency, embracing the Garden river, Batchewana and Michipicoten bands.

The Indians of the Garden river band reside chiefly on their reserve at Garden river; a portion of the Batchewana band resides by treaty, under agreement, on the Garden river reserve, chiefly in the westerly portion; a few reside on Whitefish or Ste. Marie island, in the Ste. Marie river at Sault Ste. Marie, some on a reserve at Goulais bay, in the township of Kars, granted them by the department; while a number occupy holdings on the west side of Batchewana bay, on government or private lands

as squatters. The Michipicoten band has a reserve at Gros Cap, Michipicoten harbour, where three or four families reside ; the rest of the band are found along the south side of the main line of the Canadian Pacific railway, from Missinabie to Biscotasing, and points tributary thereto.

Garden River Band.

Reserve.—The position of this reserve is on the north shore of the St. Mary river, a most delightful situation, extending eastward from a point about eight miles east of the town of Sault Ste. Marie. The Canadian Pacific railway runs from east to west through its entire length.

The area, according to the last report of my predecessor in office, being for the year 1900, appears to be upwards of twenty-nine thousand acres.

The portion of the reserve lying along the St. Mary river is level, and for the most part sandy, but capable of producing hay, oats, potatoes and vegetables in good quantities when properly cultivated.

The area under cultivation is, however, of small extent. Back from the river front at a distance of from a mile to a mile and a-half, the land rises into a range of rocky hills and bluffs of but little agricultural value. Iron, copper and gold are said to exist in this rocky formation.

Tribe.—The Indians of this band are of the Ojibbewa tribe ; a majority, however, consists at the present date of half-breeds of French descent.

Vital Statistics.—The population at present is about four hundred and thirty-six, composed of one hundred and six men, one hundred and twenty-three women, one hundred and four boys, and one hundred and three girls. There occurred during the year, ten births and ten deaths ; while there was an increase of one by marriage, making a net increase of one in the population over last year.

Health and Sanitation.—The general health of the band during the past year has been good, no epidemic has prevailed, a few have been carried off by consumption, while to old age and weakly childhood may be ascribed most of the rest of the deaths.

No small-pox has appeared among these Indians during the recent visitation of the country by that disease. I understand that most of the members of the band have been vaccinated since the outbreak of the disease in 1900, by Dr. J. A. Reid, the authorized medical attendant of the band, who pays the Indians regular periodical visits, and looks carefully after their sanitary condition.

From the natural situation of this reserve, it cannot but be healthy. The houses are generally cleanly both outside and in, and but very little filth or refuse is to be found.

Resources and Occupations.—Farming on a small scale is engaged in by a majority of the band ; hay, oats, potatoes, pease and vegetables are grown. Last year the potato crop was a complete failure, resulting in a great scarcity of seed for this year's crop ; on this account I procured a quantity of seed potatoes for those requiring them in the planting season, and arranged for payment out of the September interest money. So far this season there is promise of an abundant yield in almost every instance. The Indians also raise some horses, cattle and pigs, but the breeds are generally of an inferior quality owing to the want of care in breeding. Many of the men work in the woods in the winter at taking out ties, wood and timber ; and in the spring on the rivers driving logs, timber and pulp-wood. Last winter a number of the band took out railway ties on the reserve, filling a contract with the Harris Tie and Timber Company for upwards of twenty thousand railway ties, delivering them on the line of the Canadian Pacific railway, for which they received twenty-one cents per tie. Some engage in prospecting for mineral ; and during the summer and fall months act as guides for prospectors and sportsmen, while others go on surveying parties, in which work they are considered first-class men. Only a few of the band do much hunting and trapping.

During the past and previous winters Mr. L. O. Armstrong, the colonization agent for the Canadian Pacific Railway Company, believing that he had discovered consider

able histrionic and musical talent among the Indians of this band, organized a company to present the Indian drama from Longfellow's 'Hiawatha,' and after considerable training appeared with his Indian company in the principal cities of the United States, where he produced the representation of the drama successfully, the last representation being given in Chicago early in the season, where the company played to crowded houses. During the present summer the drama has been presented daily at Kensington point, where there is a beautiful natural amphitheatre, while the stage is fitted up on a small island adjacent to the shore, where thousands of excursionists visited, for the purpose of enjoying the trip and seeing the drama.

Buildings.—The dwellings are mostly of log and frame, many of them neatly whitewashed. The stables are generally of log and are kept in a fairly good state of repair.

The public buildings consist of a council-hall of two stories, built of frame and painted, with a small lock-up adjoining.

Stock.—This consists of horses, cattle and pigs, the quality being rather inferior, requiring improvement in breeding.

Farming Implements.—These embrace ploughs, harrows, cultivators, hay-rakes, several mowing-machines and fanning-mills, with the other smaller tools usually required in farming and gardening.

Education.—There are two schools on this reserve: the Roman Catholic school under the superintendency of the resident missionary, Rev. H. Caron, who is assisted by two lady teachers, and the Protestant school, in charge of Miss Frost, daughter of the Church of England missionary. The former is a comfortable two-roomed building, in a good state of repair. There were entered on the register of this school during the past half year sixty-seven pupils of school age, while the average attendance amounts to forty-one, which is a very fair average. The progress of the pupils has been fairly good.

The latter, or Protestant school-house, is a new one just completed and not yet occupied, consisting of a school-room on the ground floor, and dwelling-rooms for a teacher on the first floor. The number of pupils on the register of this school was forty-one, while the average attendance was but fourteen. The progress of some of the children is fair, but irregularity of attendance prevents any marked progress.

Religion.—The religious denominations of this band are Church of England, Roman Catholic and Methodist, there being three churches. Of these the Roman Catholic appears to have the greatest number of adherents. There are about thirty-five families connected with the Church of England, but one Methodist, and the rest are Roman Catholics. The Church of England people have their regular Sunday services conducted by the resident clergyman, Mr. F. Frost. The Roman Catholic services are also conducted regularly by the Rev. H. Caron, the priest in charge of the mission. Formerly an occasional service was held by a Methodist minister, but these have now been discontinued. Both the Church of England and the Roman Catholic congregations have very neat little churches, and both are well attended.

Characteristics and Progress.—Some progress is being made, and the members of the band are reasonably industrious, making good wages generally when they work, but ready to spend most of it when earned. Very few think a great deal of providing for the future by saving their earnings. Many of them, however, supply themselves with the comforts of life to a greater extent than formerly.

Temperance and Morality.—Some of the band are addicted to drinking when they can obtain liquor. I have had occasion to punish several of this band during the past year by imposing fines.

Batchewana Band.

Reserve.—The reserves belonging to this band are situated, one, a small island in the rapids of St. Mary river, at Sault Ste. Marie, occupied by only three or four families, and another on the west shore of Goulais bay, in the township of Kars, comprising about one thousand eight hundred acres.

Tribe.—These Indians are also of the Ojibbewa or Chippewa tribe, and include a number of half-breeds of French descent. The members of the Agawa branch of this band, who reside on Batchewana bay on government and private lands, are all, or nearly all, pure-bred Indians.

Vital Statistics.—This band consists of two branches, the Batchewana and the Agawa, the former consists of three hundred and one persons—eighty-three men, ninety-six women, fifty-seven boys and sixty-five girls; the latter of fifty-nine persons—sixteen men, fourteen women, eighteen boys and eleven girls. During the past year there were ten births and six deaths.

Health and Sanitation.—The year appears to have been one of the healthiest in sanitary conditions.

The general health of the band has been good during the year, no epidemic having prevailed.

The dwellings are generally kept clean, and sanitary regulations are fairly observed. There is no regular physician engaged for this band, the members employing whom they see fit.

Resources and Occupations.—Nearly one-half of this band reside on the Garden river reserve, where many of them engage in small farming, and where they cultivate upwards of four hundred acres of land.

In addition to farming they work in the woods with surveying parties, and engage in fishing, hunting, exploring, and act as guides and prospectors. In the seasons they engage in making sugar, basket-making, manufacturing birch bark and deerskin articles for sale.

The members of the band living at Goulais bay and Batchewana do very little farming, but work for the fishing company and engage in the other occupations enumerated above.

Buildings.—The houses on the Garden river reserve and those at Goulais bay are generally comfortable, the former being either frame or log, while the latter are mostly log buildings.

Stock and Farming Implements.—The Indians residing at Garden river have considerable stock, chiefly cattle, horses, pigs and poultry, all common bred. Those residing at other places have little, if any, stock. Their implements consist chiefly of ploughs, harrows, wagons, cultivators, fanning-mills, scythes and garden tools.

Education.—The Batchewana band has no schools of its own. The Indians on the Garden river reserve send their children to the Roman Catholic school there, as they contribute a portion of the salary of the teachers. It is expected that those residing at Goulais bay will erect a school before the end of another year, as an appropriation has been made for the salary of a teacher. The children attending the Garden river school make fair progress.

Religion.—Most of this band belong to the Roman Catholic Church. They have two places of worship, one at Goulais bay and one at Batchewana bay. A missionary visits these points periodically, there being no priest stationed there. Sunday and holiday services are held by a layman.

Characteristics and Progress.—The members of this band are generally fairly industrious, and according to the circumstances in which they are placed, engage in farming, fishing, exploring, hunting and trapping, being excellent fishermen and intelligent guides and explorers.

Temperance and Morality.—Those residing away from the influence of the white population are fairly temperate and moral, but some who come within the influence of the town where liquor is sold, I am led to believe, indulge considerably in intoxicants. I have, however, made no convictions for drunkenness of members of this band during the portion of the year I have been acting as agent.

Chief.—Since the death of old Chief Nubenaigooching, in January, 1899, this band had no chief until May 15 last, when an election was held for chief and three councillors, resulting in the election of Patrick Nubenaigooching, son of the late chief,

as chief; John B. Corbier, of Garden river, John B. Jourdain of Goulais bay, and Peter Wahboose, of Batchewana, as councillors.

Michipicoten Band.

Reserve.—A small reserve at Gros Cap, a short distance west of Michipicoten river, belongs to this band, and contains at the present date about eight thousand and fifty-nine acres. Michipicoten harbour, the lake terminus of the Michipicoten branch of the Algoma Central & Hudson Bay railway, is situated in what was formerly a portion of this reserve, but recently surrendered to the railway company, which has erected large ore docks for the shipment of its iron ore, the product of the 'Helen' mine.

Tribe.—The members of this band belong to the Chippewa tribe, and among them are found French, Scotch and English half-breeds. The language chiefly used is Indian; a few, however, speak some English.

Vital Statistics.—The number of persons on last year's pay-list of Robinson treaty annuities, was three hundred and thirty-four, consisting of eighty men, ninety women, seventy-two boys and ninety-two girls. There were nine births and two deaths during the year, making an increase of seven in the band.

Health and Sanitation.—The past year with this, as with the other bands in this agency, has been exceedingly healthy; no epidemic of any kind having appeared among the band.

The houses that I visited on the reserve are kept neat and clean.

Occupations.—Most of the Indians are engaged in fishing operations, and as guides and canoemen. They are good packers; and are employed extensively by the Hudson's Bay Company and by surveying parties.

None of this band have as yet engaged in any cultivation of the soil on this reserve.

Buildings.—There are but three houses, built of logs, on the reserve, which are fairly comfortable.

Stock.—There are no cattle or stock of any kind.

Education.—There is a Roman Catholic school at Michipicoten river, with but small attendance. The school has been conducted during the past year by Miss Katie O'Connor, and fair progress is reported.

Religion.—There is a small Roman Catholic church on the Michipicoten river, where occasional services are held by a missionary and also by a layman, which are well attended. There has also been a neat Roman Catholic church erected on the reserve, completed during the past year; the church was built and presented to the band by the late C. V. Clergue, who took a very kindly interest in the band. There is no resident priest, but occasional service is held by the visiting missionary. The members of this band at Michipicoten are nearly all of the Roman Catholic faith. Those at Chapleau, Missinabie and along the main line of the Canadian Pacific railway, mostly belong to the Church of England, and their spiritual requirements are looked after by Rev. Mr. Cheney, who is the clergyman at Chapleau.

Characteristics.—As I made but one visit to this band, I can say little from personal knowledge; the Indians appear to be happy and contented, and were certainly delighted with my visit to Michipicoten, where, after they had received their money, I treated them to a light repast, followed by foot races and games, for small prizes, winding up with a football match, which they all seemed to enjoy very much.

Temperance and Morality.—The greater part of this band, being at a distance from where liquor is sold, are generally sober and fairly industrious; although some complaints have been made that a few of them in the neighbourhood of Michipicoten obtain liquor and drink to excess. The chief of the band has requested that a constable be appointed for the reserve, in order to bring any transgressors of this kind to justice.

Chief.—James Cass was elected to succeed the late Chief Sanson Legard, who died in 1900. The new chief has endeavoured to the best of his ability to raise the standard of morality among the band, and is anxious that they all should remove to the reserve, where they could make permanent homes for themselves and cultivate plots of their own land. He is an earnest advocate of temperance and by precept and example tries to influence his people in the right way.

General Remarks.—Owing to the large amount of ordinary office work which has presented itself during the short period in which I have had charge of the agency, I have been unable to make myself as well acquainted with the requirements and necessities of the several bands under my charge as I have desired. Time does not admit of my spending any protracted period on the reserves, but I have taken every opportunity of obtaining all necessary information and to encourage the Indians in the exercise of thrift and industry.

I have, &c.,

WM. L. NICHOLS,
Acting Indian Agent.

PROVINCE OF ONTARIO,
OJIBBEWAS OF LAKE SUPERIOR, WESTERN DIVISION,
PORT ARTHUR, August 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report concerning the Indians of this agency for the year ended June 30, 1902.

FORT WILLIAM BAND.

Reserve.—The reserve is situated along the Mission and Kaministiquia rivers, and contains fourteen thousand five hundred acres, the land along the rivers is of good quality ; the back land is much improved by the now excellent drainage.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population is two hundred and ninety ; consisting of sixty men, eighty-one women, seventy-seven boys, and seventy-two girls. During the year there were seven births, and fourteen deaths.

Health and Sanitation.—During the year there was considerable scarlet fever and some typhoid in the band. Every precaution was taken to prevent their spread. In the early spring the houses were whitewashed and all rubbish burned.

Resources and Occupations.—The chief occupations of these Indians in summer are farming, acting as guides, exploring for minerals, and picking berries ; in the winter cutting cord-wood, and working in lumber camps. The building of elevators by the Canadian Pacific Railway Company, has given employment to a great many.

Buildings.—Generally the houses are small, but they are comfortable and clean.

Stock.—The number remains about the same, but more attention is paid to quality than formerly.

Farming Implements.—The Indians now own enough machinery for all their wants.

Education.—There are two schools on the reserve, the Indian boys' and girls' day school, and the St. Joseph's Orphanage. The teachers are Sisters of St. Joseph. The progress of the children is fair; but results would be much better, if the parents took more interest.

Religion.—There are two hundred and thirty-one Roman Catholics, and fifty-nine pagans in the band. There is a church on the reserve, which is well attended, and a convent in charge of the Rev. Mother Superior and four sisters.

Characteristics and Progress.—The Indians do not take as much interest in agriculture as desirable, preferring something with quicker results. There has been plenty of work in the immediate vicinity at good wages, which was taken advantage of.

Temperance and Morality.—There seems very little to complain of in both these respects.

Red Rock Band

Reserve.—This reserve is situated on the Nipigon river, near Lake Helen, and contains four hundred and eighty-six acres.

Tribe.—The Indians of this band are of the Ojibbewa tribe.

Vital Statistics.—The population is two hundred and thirteen, consisting of forty-six men, fifty-four women, sixty boys, and fifty-three girls. There were six births, one woman joined the band through marriage, and there were nine deaths.

Health and Sanitation.—The health of these Indians has been good; there were a few cases of scarlet fever. Most of the houses were whitewashed, and the old rubbish burned.

Resources and Occupations.—The principal occupation is acting as guides to the tourists who go up the Nipigon river fishing; some cultivate small patches of land. During the winter they engage in hunting and lumbering. They found ready employment with prospectors during the year at liberal wages.

Buildings.—Their buildings are comfortable, though small.

Stock.—They are gradually acquiring more and better stock.

Farming Implements.—They own all the implements necessary to harvest their crops.

Education.—The school at the Roman Catholic mission is fairly attended. The one on the reserve has been closed for several years; the parents do not show much interest in educational matters.

Religion.—Of this band thirty-eight are Anglicans, and one hundred and seventy-five Roman Catholics. The Indians are greatly interested in religious matters.

Characteristics and Progress.—The Indians of this band are industrious and law-abiding. They all seem to make a confortable living.

Temperance and Morality.—There has been some improvement in both of these respects during the year.

Church of England Mission.

Reserve.—This reserve is occupied by a portion of the Red Rock band, and is situated on the west shore of McIntyre's bay, Lake Nipigon. It contains five hundred and eighty-five acres.

Population.—About thirty persons reside here.

Resources and Occupations.—The occupations of this portion of the band are hunting, fishing, exploring, and farming in a small way.

Buildings.—There are some very comfortable buildings on this reserve.

Stock.—A horse has been purchased by the band.

Farming Implements.—The implements furnished by the department are sufficient for present purposes.

Religion.—The Indians of this portion of the band are all Anglicans.

Characteristics and Progress.—They are a law-abiding community and appear to be industrious. A small quantity of new land has been broken and a house is in course of erection for the missionary, who will reside there.

Nipigon Band.

Reserve.—The principal reserve of this band is situated on Gull bay, Lake Nipigon, and contains nine thousand eight hundred and twenty-five acres. It is well wooded along the banks of the Gull river, which runs through it; the soil is light. There is another reserve at Jackfish island, near the Hudson's Bay Company's post, and one at Island point, containing one hundred and thirty-five and one-half acres.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—This band numbers five hundred and twelve, consisting of eighty-seven men, one hundred and eleven women, one hundred and sixty-one boys and one hundred and fifty-three girls. There were fourteen births and twenty deaths during the year; one woman joined the band through marriage.

Health.—The death-rate is greatly due to scarlet fever, otherwise there has been very little sickness.

Resources and Occupations.—Hunting is the principal occupation of the members of this band. Some act as guides on the Nipigon. Ready employment has been found with explorers during the past year.

Buildings.—There were no new buildings erected this year, but some are under construction.

Farming Implements.—The Indians have all the implements required at present.

Education.—The school on Jackfish island is closed at present; the Indians show no desire to have it re-opened.

Religion.—Of this band seventeen are Anglicans, one hundred and eighty Roman Catholics and three hundred and fifteen pagans. There is a Roman Catholic church on Jackfish island, where mass is held occasionally.

Characteristics and Progress.—These Indians are industrious and law-abiding. A small quantity of new land was broken this year.

Temperance and Morality.—As far as can be judged, they are of very good morals, and are so far removed from where intoxicating liquors are sold that it means almost prohibition.

Pays Plat Band.

Reserve.—This reserve is situated on the Pays Plat river, Lake Superior, and contains six hundred and five acres

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—The population is forty-five, consisting of six men, fourteen women, fourteen boys and eleven girls. There were two births and one death during the year, and one woman married into another band.

Health and Sanitation.—The health of the band has been good; the reserve is kept very clean.

Resources and Occupations.—The occupations of these Indians are hunting, fishing, exploring and mining. They also sell a large quantity of berries. They raise enough vegetables for their own use.

Buildings.—The members of the band are comfortably housed.

Stock.—At present they have no stock.

Farming Implements.—They own everything necessary for their present needs.

Education.—The school is closed at present; the parents do not take enough interest in this matter.

Religion.—All the members of this band are Roman Catholics. There is a church on the reserve, where mass is held occasionally.

Characteristics and Progress.—They are fairly industrious and have secured all the employment they required from prospectors at good wages.

Temperance and Morality.—They are both temperate and moral.

Pic Band.

Reserve.—This reserve is situated on the Pic river, Lake Superior, and contains eight hundred acres, divided into twenty-five farms, facing the river.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—The population is two hundred and nine, consisting of forty-four men, fifty-seven women, fifty-nine boys and forty-nine girls. There were three births, thirteen deaths and one woman married into the band.

Health and Sanitation.—The health of these Indians has not been good; there was a good deal of scarlet fever among them. The reserve is well cleaned every spring and all rubbish burned.

Resources and Occupations.—These Indians do considerable farming. They also engage in hunting, fishing and exploring. They sell large quantities of blueberries.

Buildings.—The members of the band are well and comfortably housed.

Stock.—They have not acquired any stock, the horse supplied by the department being sufficient for their requirements.

Farming Implements.—They are well supplied with the class of implements required.

Education.—There is a school on the reserve which is attended fairly well. The interest taken by the parents is above the average.

Religion.—Of this band five are Anglicans and two hundred and four Roman Catholics. There is a church on the reserve, where mass is held occasionally.

Characteristics and Progress.—They are fairly prosperous; this year has been better than usual. They are law-abiding and very good workers. A small quantity of new land was broken.

Temperance and Morality.—In these respects there is nothing to complain of.

Long Lake Band.

Reserve.—This reserve is situated at the northwest corner of Long lake, and contains six hundred and twelve acres.

Tribe.—The members of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population is three hundred and thirty, consisting of sixty-one men, eighty-three women, eighty-one boys and one hundred and five girls. There were six births and two deaths among the band.

Health.—The health of these Indians has been good; there has been no epidemic among them.

Resources and Occupations.—These are hunting Indians. They transport the goods of the Hudson's Bay Company from Lake Superior, and have received considerable employment from prospectors.

Education.—There is no school on this reserve. The Indians are taking a great deal of interest in the education of their children.

Religion.—Of this band sixty-one are Anglicans, two hundred and sixty-eight Roman Catholics and one pagan. There is a Roman Catholic church on the reserve, where mass is celebrated occasionally.

Characteristics and Progress.—These Indians are intelligent and industrious; they show great interest in anything new. They seem to be fairly comfortable.

Temperance and Morality.—The morality of these Indians is good. They have no opportunity to indulge in intoxicating liquors.

I have, &c.,

J. F. HODDER,
Indian Agent.

PROVINCE OF ONTARIO,
PARRY SOUND SUPERINTENDENCY,
PARRY SOUND, September 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report and statistical statement, showing the condition and progress of the various bands in this superintendency, for the year ended June 30, 1902.

PARRY ISLAND BAND.

Reserve.—This reserve is situated on the eastern shore of the Georgian bay, near the town of Parry Sound. It contains an area of twenty-seven square miles.

Tribe or Nation.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this reserve (exclusive of those Indians residing on the reserve who do not belong to the band) is one hundred and eight, consisting of twenty-eight men, thirty-five women and forty-five children. During the year there have been three births and two deaths, making a total increase in the number of persons in the band of one for the year.

Health.—The health of the Indians of this band for the year has been comparatively good, only two deaths being recorded during the year.

Resources and Occupations.—The resources of this reserve are agriculture, hunting and fishing. The lumbering operations of several large concerns at Parry Sound, together with the works in connection with the Canada Atlantic railway at Depot Harbour located on the reserve, enable the members of this band to secure employment at almost any time they may desire it.

The members of this band have exceptional means of earning a livelihood. Besides their agricultural pursuits, which are gradually being improved, they secure considerable employment acting as guides to tourists who visit the adjacent summer resorts during the season, and in winter they can secure work in the lumbering camps located within easy reach of the reserve.

Buildings and Stock.—The improvements in these are not as noticeable as I should wish. There is, however, one very good farm on the reserve, owned by James Walker, a former member of the Cape Croker band, but who now belongs to the Parry Island band, and I am endeavouring to induce the other members of the band to emulate this Indian in their agricultural pursuits.

Education.—The educational affairs of this band are in a fairly satisfactory condition. There are two schools on the reserve, each taught by a female teacher holding a third-class certificate. There are twenty-two children of school age on the reserve besides those children residing on the reserve who do not belong to the band, some of

whom attend school, so that the attendance has been fairly good during the past year. The progress of the pupils has been as good as could be expected.

Religion.—The religious denominations of this band are divided as follows: fifty Methodists, thirty-six Roman Catholics and twenty-two pagans. The Methodists have a very good church on the reserve, and the services, which are conducted by the Rev. Allan Salt, the resident missionary on the reserve, are usually well attended. The Roman Catholics receive occasional visits from one of their clergy, the services at such times being held in the Skene school-house.

Characteristics.—The Indians of this band are a very well behaved and law-abiding people, and morally they stand very high.

Temperance.—There has only been one case of intemperance reported to me among the members of this band during the past year, so in this respect their conduct has been very good.

Shawanaga Band.

Reserve.—This reserve is situated about four miles inland from the eastern shore of Shawanaga bay, on the east side of Georgian bay, and twenty-three miles north of the town of Parry Sound. It contains an area of fourteen square miles.

Tribe or Nation.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—This band has a population of one hundred and nine, consisting of twenty-five men, thirty-four women and fifty children. During the year there have been five births and one death, making a total increase for the year of four.

Health.—The health of this band for the past year has been very good, only one death being recorded.

Resources and Occupations.—The resources of this reserve comprise farming, which, however, is not carried on to any great extent, fishing and hunting, and the gathering and selling of wild fruit, &c. Fishing and hunting are the means adopted by most of the Indians in earning a living. The Buffalo Fish Company, which has a depot at Pointe au Baril, employs quite a few of the members of this band in the capacity of fishermen, at which they make good wages.

Buildings.—The buildings of this band are small and of an inferior type. Most of them are built of logs, and of such dimensions that they do not allow of the proper housing of the occupants.

Education.—The children of this band are taught in the school-house on the reserve, where the exercises are conducted by a female teacher holding a third-class certificate. The course of studies is that authorized by the department. The number of children of school age is twenty-six. The progress of the pupils during the past year has been very fair.

Religion.—The religious denominations of this band are divided as follows:—seventy-nine Methodists and thirty Roman Catholics. There are two churches on the reserve: the one belonging to the Methodists, which is now completed, being a very creditable structure, the other, belonging to the Roman Catholics, is not near completion yet. Services have frequently been held in the new Methodist church, and they have been well attended.

Characteristics.—The Indians of this band, while not as industrious, collectively, as they might be, appear to be a bright and intelligent body of people. A few of them do exceptionally well in their employment of fishing for the Buffalo Fish Company at Pointe au Baril, and if more of the band would apply themselves to work, they would all be able to earn a fair living.

Temperance and Morality.—I am pleased to be able to say that no case of intemperance among the band has been reported to me during the past year. The moral conduct of these Indians has also been of a high order.

Indians loading their wood at Spur at West end of Stony Reserve, near Morley, Alta.

Henvey Inlet Band.

Reserve.—This reserve is situated on one of the arms, or inlets, of the Georgian bay, almost midway between Byng inlet and French river. It contains an area of thirty square miles.

Tribe or Nation.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—This band has a population of one hundred and sixty-six, consisting of forty-seven men, fifty-five women and sixty-four children. During the year there have been four births and three deaths, which makes an increase in the population of this band of one for the year.

Health.—The health of the members of this band for the past year has been fairly good.

Resources and Occupations.—The resources of this reserve are agriculture, fishing and hunting. The members of this band engage in farming only to a limited extent. Fishing, hunting and working in the lumber camps in the vicinity of the reserve are the means adopted by most of them in earning a living.

Education.—The number of children of school age on this reserve is thirty-one. There is one school on the reserve conducted by a female teacher holding a third class certificate. The course of studies is that authorized by the department. The attendance and discipline are very good, and the pupils are making very good progress in their studies.

Buildings, &c.—The buildings belonging to the members of this band are of a very fair order, their dwelling-houses being whitewashed and kept in a very neat condition. Their village is located on a high and picturesque bluff, and, I think, taking their houses collectively, they form the most creditable group of Indian houses in this superintendency. Their agricultural implements are few in number, comprising three ploughs and a harrow.

Religion.—Nearly three-fourths of the members of this band are Roman Catholics, the remainder being Methodists. A very good Roman Catholic church is now completed, and services are occasionally held in it by the missionary priest who resides at Byng Inlet. The Methodists have also erected a very good church, and services are frequently held in it by visiting clergy.

Characteristics.—The members of this band are of a superior character. They are a stalwart body of men, and their appearance indicates constant industry.

Temperance and Morality.—Their conduct in both these respects has been, during the past year, all that could be desired.

Nipissing Band.

Reserve.—The reserve belonging to this band is situated on the north shore of Lake Nipissing, ten miles west of the town of North Bay. It contains an area of sixty-four thousand acres.

Vital Statistics.—This band has a population of two hundred, consisting of forty-five men, fifty-nine women and ninety-six children. During the year there were six births, three Indians joined the band, there were six deaths and two Indians left the band, making a total increase in the number of persons comprising this band, of one for the year.

Health.—The health of the members of this band for the past year has been good.

Resources and Occupations.—The resources of this reserve are agriculture, hunting and lumbering. The members of this band have exceptional means of earning a living. The reserve being located near a divisional point of the Canadian Pacific railway, together with the lumbering operations which are being carried on by Mr. J. R. Booth on the reserve and in the vicinity, enables them to secure employment at almost any time they may desire it.

Education—There are forty-four children of school age on the reserve. They have an excellent school situated at their village at Beaucage bay, where the school is presided over by a female teacher holding a third-class certificate. The attendance is good and the progress of the pupils quite satisfactory.

Religion.—The members of this band are all Roman Catholics. They have a good church on the reserve, where services are conducted occasionally by visiting missionaries.

Characteristics.—The Indians belonging to this band are a smart intelligent body of people and in numerous respects compare favourably with many of the white settlers in this district. Their farming operations are carried on only to a limited extent, as they depend largely on securing employment in the lumbering camps, and on hunting, as a means of earning a living.

Temperance and Morality.—During the year two cases of intemperance were reported to me as having occurred among members of the band visiting North Bay. The persons who supplied the intoxicants were, however, prosecuted and a penalty imposed, so that I hope that a repetition of this conduct by the Indians will not occur. With this exception, their conduct has been satisfactory.

Dokis Band.

Reserve.—The reserve belonging to this band is situated at the outlet of Lake Nipissing, at the head of the French river. It contains an area of about twenty-five thousand acres consisting of two islands.

Tribe or Nation.—These Indians nominally belong to the Ojibbewa nation, but in reality they are half-breeds with a large admixture of French blood.

Vital Statistics.—The population of this band is eighty, consisting of twenty men, twenty-eight women, and thirty-two children. During the year there were four births, and three deaths, making a total increase of one in the number of persons comprising this band for the year.

Health.—The health of the members of this band for the year has been good.

Resources and Occupations.—The resources of this reserve at present appear to be very limited. Agriculture is carried on in a very limited manner and the only other occupation of these Indians is working in the lumber camps. On this reserve there is a very valuable tract of pine timber which, if disposed of, as it could easily be to great advantage, would place the members in a very prosperous condition. At present most of them are in very indigent circumstances and are likely to remain so as long as the present policy pursued by them regarding their timber is permitted to exist.

Buildings and Stock.—The buildings of this band are few in number and composed of logs.

The stock and farming implements are owned almost entirely by Chief Dokis and his sons.

Education.—There are no educational facilities whatever on this reserve. Consequently the children are growing up without the advantages that education gives, which is much to be deplored.

Religion.—The Indians belonging to this band are all Roman Catholics. They have no church.

Characteristics.—The characteristics of these Indians are largely French. They appear to be of average intelligence and should be in a more prosperous condition but for the refusal of their chief to consent to the sale of their timber for their benefit.

Temperance and Morality.—In these respects their conduct is all that could be desired.

Temogaming Band.

Location.—No reserve has yet been given to this band. Its members live around the shores of Lake Temogaming, a considerable number of them residing on Bear island,

adjacent to the Hudson Bay Company's post. Lake Temogaming is situated about forty miles west of Lake Timiskaming.

Tribe or Nation.—The Indians of this band are pure Ojibbewas.

Vital Statistics.—The population of this band is eighty-six, consisting of twenty-two men, thirty-five women, and twenty-nine children. During the year there have been two births, three Indians joined the band, there was one death, and four Indians left the band, making the population of this band the same as it was for the year 1901.

Health.—The health of these Indians for the past year has been very good.

Resources and Occupations.—Almost the only resource of this band is hunting, and this means of earning a living is rapidly decreasing. There is excellent fishing in the lakes and streams which abound in this district, but fishing is carried on only to a limited extent. The Indians make very little attempt at farming, giving as a reason that, as no reserve has been assigned to them, they do not care to clear up land that might afterwards be placed outside the bounds of the territory they claim as their reserve.

Buildings.—Around the Hudson Bay Company's post, on Bear island, a few houses have been erected, but the majority of the members of this band live in tents all the year round.

Education.—There are no facilities for education for the members of this band. Consequently the children belonging to it are growing up without any of the advantages that education gives.

Religion.—This band is composed entirely of Roman Catholics. A church is in course of erection near the Hudson's Bay post, but owing to the inaccessibility of Temogaming from the outside world, I do not see how services are to be conducted in this edifice when completed, except at long intervals.

Characteristics.—The members of this band appear to be of an unusually hardy character, which is evidenced by the arduous work they perform in portaging and with the paddle, at both of which they excel.

Temperance and Morality.—In these respects their conduct is entirely satisfactory.

Watha Band (formerly Gibson).

Reserve.—The reserve of this band is situated between the southern end of Lake Muskoka and the Georgian bay. It contains an area of twenty-five thousand acres.

Tribe or Nation.—These Indians are Mohawks, or as they are more generally known, Iroquois. They were originally residents of Oka, Quebec.

Vital Statistics.—This band has a population of one hundred and thirty-three, consisting of thirty-three men, twenty-seven women and seventy-three children. During the year there were five births and two deaths, making a total increase in the number of persons comprising the band, of three for the year.

Health.—The health of this band for the year has been fairly good.

Resources and Occupations.—The resources of this reserve are agriculture and lumbering.

The members of this band depend chiefly on farming for a living. During the winter months some of the younger men find occasional employment in the lumber camps in the vicinity of the reserve, and in summer some of them act as guides to tourists, who frequent the Muskoka lakes in large numbers.

Buildings.—The buildings belonging to the members of this band are superior to those found on any other reserve in this superintendency.

Education.—There is one school on this reserve, conducted by a male teacher holding a third-class certificate. The number of children of school age is thirty-four. The school is under the supervision of the Methodist Missionary Society, and very fair progress is being made in the education of the children.

Religion.—There are three religious denominations represented in this band, consisting of one hundred and twenty-one Methodists, eleven Roman Catholics and one Plymouth Brother. A Methodist missionary, in the person of the school teacher, is stationed on the reserve, and regular services are held in the church, which are well attended by the adherents of this denomination.

Characteristics.—This band may be considered the most industrious and progressive of any in this superintendency, which is largely due to the interest taken in farming.

Temperance and Morality.—The conduct of the members of this band in these respects is of an exceptionally high order and leaves nothing to be desired.

Maganettawan Band.

Reserve.—This reserve is situated about five miles from the mouth of the Maganettawan river. It contains an area of eight thousand six hundred and seventy acres.

Tribe or Nation.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—There are only twenty-eight members of this band who reside permanently on the reserve; the remainder reside on the Manitoulin island. The population of the reserve consists of six men, eight women and fourteen children. During the past year there have been two births and one death recorded, making an increase in the total number of persons comprising the band, of one for the year.

Health.—The health of the resident members of this band for the past year has been fairly good.

Resources and Occupations.—The resources of this band are farming in a small way, and hunting and fishing. The reserve lies adjacent to the large lumber mills of the Messrs. Holland and Graves Company at Byng Inlet, which enables the Indians to secure employment at any time they may desire it, so that if they want to work, they can easily earn a very fair living.

Buildings and Stock.—As the population of the resident members of this band is small, their buildings are, of course, in proportion, and consist of two dwellings, two stables and two other buildings. Their live stock is fairly numerous for the population of the reserve.

Education.—There is no school on this reserve. The children who attend school do so at Byng Inlet about two miles distant from the reserve where there is a large and well conducted school.

Religion.—The members of this band are all Roman Catholics. They have no church, as the population of the reserve is too small to build and support one.

Characteristics and Temperance.—The Indians of this band are an industrious and well-behaved people, and are as temperate in their habits as any of the bands in this superintendency.

I have, &c.,

W. B. MACLEAN,
Indian Superintendent.

PROVINCE OF ONTARIO,
SAUGEEN AGENCY,
CHIPPAWA HILL, July 23, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902.

Reserve.—The Saugeen reserve is located in the county of Bruce, on Lake Huron. It comprises about nine thousand and twenty acres.

Tribe or Nation.—The Indians of this reserve are Chippewas.

Vital Statistics.—The population is three hundred and seventy-two, consisting of ninety-five men, one hundred and twenty-four women, and one hundred and fifty-three children. There have been ten births and four deaths during the year, which makes an increase of six in the population.

Health and Sanitation.—The good health of the Indians for the past year has been unprecedented in the remembrance of many of them on this reserve, including their chief. Sanitary precautions are fairly well observed.

Resources and Occupations.—The chief occupation of the Indians on this reserve is farming A limited quantity of timber is sold by the Indians and a number of them, both men and women, are engaged with white people as hired help. Considerable money is earned by Indians who have good horses by teaming for saw-mills. Other resources are: the making of baskets and rustic work, berry-picking, the gathering of ginseng-root and other medical roots and herbs.

Buildings.—Not many new buildings have been erected during the past year, but a great improvement is noticeable in the fencing, and home surroundings, which adds to the comfort of the Indians, and materially improves the appearance of many of the locations.

Stock.—The general improvement of stock is very slow.

Farming Implements.—There is a general improvement of the farming implements on the reserve: quite a number of new implements have been purchased during the year.

Education.—The largest school-house on the reserve is in the Indian village. Another is situated at French Bay and another at Scotch Settlement. This makes a total of three schools on the reserve. Each school is well equipped and is kept open during the whole teaching year. The parents appear to be greatly interested in the progress of their children in education, and yet they are lax in enforcing their regular attendance at school.

Religion.—The Indians of this reserve claim to belong to three different denominations, viz.:—Methodists, Congregationalists, and Roman Catholics. There are four churches on the reserve; two of which are brick, one stone, and the other is a frame structure. The Indians generally manifest a commendable interest in religion.

Characteristics and Progress.—As a band, it cannot be said that the Indians are industrious, but they are as a rule law-abiding. They are certainly becoming richer by the improvements on their homes and general surroundings, although none are accumulating wealth.

Temperance and Morality.—The Indians of this reserve are generally temperate, but some are addicted to the use of intoxicants.

Otherwise the Indians are not strictly moral, although there are proofs of an improvement.

I have, &c.,

JOHN SCOFFIELD,
Indian Agent.

PROVINCE OF ONTARIO,
SIX NATION INDIANS,
BRANTFORD, July 28, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of the Six Nations of the Grand river for the year ended June 30, 1902.

Reserve.—The reserve is located in the township of Tuscarora and partly in the township of Onondaga in the county of Brant, with a portion in the township of Oneida in the county of Haldimand. It contains forty-three thousand six hundred and ninety-six acres.

Tribe.—The tribes consist of the Mohawks, Oneidas, Onondagas, Tuscaroras, Cayugas, Senecas and Delawares, comprising the Six Nations of the Grand river. The number of tribes composing the Six Nations confederation was not always the same; prior to 1714 it was the Five Nations, when the Tuscaroras were admitted, since which time it has been called the Six Nations. Some one hundred and fifty Delawares were adopted later.

Vital Statistics.—There are one thousand one hundred and seventy-five men, one thousand and ninety-one women, eight hundred and eighty-eight boys, and eight hundred and ninety-six girls, making a total of four thousand and fifty, being an increase of forty over the previous year. The changes during the year were: eighty-three deaths, nine Indians ceased to be members by continued residence over five years in a foreign country, there were one hundred and twenty-one births, and eleven were added through marriages.

Health and Sanitation.—The general health has been unusually good during the year. There has been very little sickness of a severe type except two cases of diphtheria, one of them fatal, a few of typhoid fever, and several of tubercular and other chronic diseases, which are always on this reserve. There were a few cases of small-pox and chicken-pox, all of which were of a very mild type. Vaccination has been very generally performed, all the schools visited and the pupils vaccinated under the direction of Dr. Secord and his staff. There were six thousand eight hundred and ninety-eight patients treated at the medical office on the reserve; one thousand two hundred and ninety-two visits made, making four thousand eight hundred and seventy-four miles travelled by the physicians during the year. The annual circular issued by the department was carefully explained to, and distributed among the members of the band, and in many cases the precautions observed, such as destruction by fire of refuse matter and filth by which disease may be engendered, frequent use of lime whitewash on the buildings, the boiling of water, and sinking of wells to avoid use of surface ditch water which has been encouraged by the council granting loans for this purpose. Carbolic acid diluted is freely used during large gatherings, particularly in the council-house;

and after every meeting of the council, the building is thoroughly cleaned. The Six Nations Board of Health held meetings regularly and greatly assisted in enforcing instructions issued to isolate the cases of small-pox, and also took deep interest in having the annual circular issued by the department distributed and enforced.

Resources and Occupations.—General farming is the chief occcupation. The crop and stock compare favourably with those of the whites surrounding the reserve. Those who are not engaged in farming have other occupations, many are good mechanics. Many of the younger members who do not favour farming, seek employment in the factories in Brantford. A large number were employed in the beat sugar fields, as well as berry patches off the reserve.

Buildings and Stock.—The Indians are continually improving their buildings, particularly stables and barns for the better protection of their stock and crops during the winter and stormy weather. During the past year eleven large barns were built.

The crops for the past year were not generally good, wheat being injured by the fly. Oats and corn were unusually light, while potatoes were a failure on clay land.

Education.—The ten schools on the reserve were well attended, except when many left the reserve for the berry-fields early in the month of June. There are five white and four Indian teachers employed. Six pupils from Indian schools were successful in passing the examinations for admittance into the high schools off the reserve. A large two-room school at a cost of over $4,000 is in course of erection ; the contractor, Chief Levi Jonathan, is a Six Nation Indian.

Religion.—Services are regularly held by the Church of England in seven localities, Baptists in three, the Methodists in four and the Seventh Day Adventists in two. All services are well attended as well as the Sunday schools.

There is a Sunday school association on the reserve, which meets regularly. The Indians contribute very well for church purposes. The Baptists are building a large parsonage at their Ohsweken church ; the work is performed by the members of the church.

Characteristics and Progress.—The Indians are gradually improving their farms by additional improvements in buildings, fences and draining. The Farmers' Institute of the south riding of Brant held an afternoon and evening public meeting on the reserve on January 9. Both meetings were largely attended by Indians. The annual ploughing match was held. Only Indians are permitted to complete. It was very successful and largely attended. The Indians are generally good ploughmen and frequently carry off prizes when competing with the whites.

The agricultural society of the reserve, wholly under the management of the Indians, held its three days' annual fair in October. It was largely attended by Indians and many whites from a distance. Only Indians can compete. The exhibits, including stock, compared most favourably with other township fairs.

The road-work under the direction of forty-seven path-masters, who are appointed annually by the chiefs in council, was well attended to and the roads kept in good condition ; they compare favourably with those of the adjoining townships. The chiefs in council purchased a gravel-pit from which gravel is taken to improve the roads. They also purchased a road-machine. Several small bridges were constructed on the reserve by Indian contractors under the supervision of the inspector of works. The chiefs decided that steel bridges should replace the present wooden ones when necessary, and contracted with Chief Levi Jonathan to erect a steel bridge over the Mackenzie creek at a cost of $1,850.

The 38th Regiment of Haldimand has four companies of Indians. One of the Indians represented this regiment on the Coronation Contingent of Canada. The Indians make very good soldiers and are fond of drill.

Temperance and Morality.—There are several temperance societies on the reserve and meetings are held regularly. The morality on the reserve compares favourably with other municipalities.

I have, &c.

E. D. CAMERON,
Indian Superintendent.

PROVINCE OF ONTARIO,
THESSALON AGENCY,
THESSALON, August 23, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report concerning the condition of the several bands of Indians in my agency during the year ended June 30, 1902.

THESSALON RIVER BAND.

Reserve.—This reserve is situate on the north shore of the north channel of Lake Huron, about six miles east of the town of Thessalon, and contains an area of two thousand three hundred and seven acres.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band is one hundred and forty-four, consisting of thirty-four men, forty seven women and sixty-three children, the only change during the year being the death of one young man, caused by consumption.

Health and Sanitation.—The health of these Indians has been fairly good during the year. There has been no infectious disease among them with the exception of the case of one consumptive young man who died, and their houses and premises have been kept clean.

Resources and Occupations.—The Indians are chiefly employed as labourers, on farms, and in loading vessels with lumber and pulp-wood, in summer; and in the lumber camps in winter, and the young men have become expert lumbermen. They do some fishing for their own use, and the women make baskets, and gather berries for sale.

Buildings.—There has been no improvement nor has there been any addition to the buildings during the year, but they are kept clean, neat and comfortable. The Indians have only a few barns and stables, for they are not much in need of such buildings.

Stock.—They have very little stock—only a few horses, a few cows, some young cattle and pigs and poultry.

Farming Implements.—They have a few ploughs and harrows, and are well supplied with spades, shovels, hoes and hand-rakes. Nearly all the cultivation of the soil that they do is with these latter implements.

Education.—There is one school-house on the reserve, which has been kept in a good state of repair. The attendance of pupils during the past year has been very indifferent, owing mainly to the heads of families moving out from the reserve periodically to be near their work.

Religion.—These Indians are all Roman Catholics and are regularly attended to by a visiting missionary. During the year a very good church-building has been erected and finished for them, and they appear to take considerable interest in their religious instruction.

Characteristics and Progress.—They are law-abiding and industrious, and are improving in their manners, clothing and general prosperity.

Temperance and Morality.—They are a moral community, and are not addicted to the use of intoxicating liquors.

Mississagi River Band.

Reserve.—This reserve is situated on the east side of the Mississagi river and on the north shore of the north channel of Lake Huron, and comprises an area of five thousand six hundred and thirty-six acres.

Tribe.—The Indians of this band are of the Ojibbewa tribe.

Vital Statistics.—The population is one hundred and sixty-one, consisting of thirty-four men, forty-four women and eighty-three children.

Health and Sanitation.—The health of these Indians has not been quite satisfactory. They have still the dregs of their old enemy, scrofula, and kindred diseases amongst them. They had one case of small pox, one of the men having contracted the disease, it is believed, at Blind River. He was isolated by their medical officer, Dr. Baxter, and afterwards disinfected, and the usual precautions were taken to prevent the spread of the disease, and no other case occurred. In other respects there was no epidemic during the year, and their habitations have been kept clean and whitewased with lime.

Resources and Occupations.—They have almost entirely abandoned hunting and fishing for a livelihood, and are now mostly labourers. Some of the members of the band called 'inlanders' live by hunting and fishing in inland waters. Those who live on the reserve cultivate small gardens, catch fish for their own use, and work in the lumber camps in the winter, and in the saw-mills near the reserve and in loading lumber on vessels in the summer months. The women and children gather berries and make baskets for sale.

Buildings.—Their buildings are for the most part log, in a good state of repair and comfort, and their few stables and outhouses are of little value.

Stock.—They have a few horses, cows, young stock, pigs and poultry.

Farming Implements.—They have a plough, a couple of harrows and a lot of spades, hoes and rakes, sufficient for their needs, and a few driving sleighs.

Education.—There is a suitable school-house on the reserve. The attendance of the children is not very good; and their parents do not take as much interest in the attendance as could be desired.

Religion.—These Indians are all Roman Catholics, and they depend for their religious instruction upon a visiting missionary, whose visits appear to be always looked forward to with interest.

Characteristics and Progress.—They are generally industrious, the younger people being especially so, and there are signs of improvement in their manners and business methods. They are well clothed and show a desire to be thought respectable people.

Temperance and Morality.—They are a temperate community, and fairly moral, but reports imply that they are not so high in this regard as are the other bands in my agency.

Serpent River Band.

Reserve.—This reserve lies east of the mouth of the Serpent river, and is bounded on the south and west by the north channel of Lake Huron, and on the north by the Serpent river, and contains twenty-seven thousand four hundred and eighty acres.

Tribe.—These Indians are of the Ojibbewa tribe.

Vital Statistics.—The population of this band is one hundred and twenty-one, consisting of twenty-six men, thirty women and sixty-five children. There were nine births during the year and one death, thus increasing the population of the band by eight persons.

Health and Sanitation.—The health of these Indians has been good during the year, and their houses have been kept clean and whitewashed with lime.

Resources and Occupations.—These Indians are labourers, working mostly in the saw-mills on the reserve in summer, and in the lumber camps connected with the saw-

mills in the winter, and earn good wages. They do very little in agriculture, excepting the cultivation of small vegetable gardens. The women and children gather some berries for sale in the season.

Buildings.—Their houses are of a good class and are kept in repair. Fully one half of them are substantial frame buildings. The Indians have a few neat horse-stables, but little else in the way of outbuildings, and being labourers, have little use for them.

Stock.—They have a few horses, mares and colts, and some pigs and poultry, and seem to have no anxiety to acquire more.

Farming Implements.—They have a few ploughs, and a lot of shovels, spades, hoes, and rakes—sufficient for their requirements.

Education.—They have an excellent school. The attendance is fairly good, and the parents seem to take an interest in education. They have an exceptionally good teacher in Miss Adele de Lamorandiere.

Religion.—The members of the band are Roman Catholics. They have a good church and appear to take an interest in their religious instruction.

Characteristics and Progress.—They are very industrious and are law-abiding and progressive.

Temperance and Morality.—They are very temperate, abstain from intoxicants and are moral in their habits and conduct.

Spanish River Band.

Reserve.—This reserve is situate on the north shore of the north channel of Lake Huron, along the south bank of the Spanish river. It is bounded on the south and west by the waters of said north channel, and on the north by the Spanish river, and contains twenty-eight thousand acres. This band, as to residence, is divided into three communities. Two of these dwelling on the reserve are in my charge, viz., at Sagamook, a beautiful point running out into the north channel, and on the left bank of the Spanish river in the easterly end of the reserve. The third community is on Manitoulin island, under the jurisdiction of Indian Agent Sims.

Tribe.—These Indians are of the Ojibbewa tribe.

Vital Statistics.—The number of souls in the two communities within the jurisdiction of my agency is three hundred and twenty-one, consisting of sixty-five men, seventy-eight women and one hundred and seventy-eight children. There were six births, and six deaths during the year, so that the population continues stationary.

Health and Sanitation.—The health of these Indians has been exceptionally good during the year. Their premises have been kept clean and their houses have been whitewashed with lime.

Resources and Occupations.—Many of them work as farm-hands, a goodly number as labourers, and some of them follow fishing and hunting for a living. The women and children gather berries and make baskets for sale.

Buildings.—Their buildings are exceptionally good, and with outbuildings are kept in a good state of repair.

Stock.—They have a good assortment of stock, consisting of horses, cattle, pigs and poultry, and they are continually improving the quality.

Farming Implements.—They have a few ploughs and harrows and a lot of spades, hoes and rakes, sufficient for their needs.

Education.—They have two good schools—one at Sagamook, well attended and in charge of Miss Lynch, the best school in my agency—and the other at Spanish river, ably conducted by Miss Morley. The parents of the children are taking considerable interest in education.

Religion.—Those residing at Sagamook are nearly all Roman Catholics, and those residing at Spanish River are mostly Anglicans.

Characteristics and Progress.—These Indians are an industrious class, and are peaceable and law-abiding, and have made considerable progress during the year. They are well clothed and are making a comfortable living.

Temperance and Morals.—They are a temperate people, abstaining from all intoxicants, and, as far as I am able to judge, are a moral people.

General Remarks.

There is continued improvement in all the bands in the direction of civilization and the adopting of the methods of the white people. This is noticeable in their dress and business dealings. None of them have, however, taken to farming exclusively.

I have, &c.,

SAMUEL HAGAN,
Indian Agent.

Province of Ontario,
Walpole Island Agency,
Wallaceburg, Sept. 12, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to transmit my annual report on the Chippewas and Pottawattamies of Walpole island for the year ended June 30, 1902, together with a statistical statement for the same period giving the census returns for both bands taken in the months of August and September, showing the increase and decrease in the population, progress in agriculture and other industries whereby the Indians make their living.

Health and Sanitation.—The people have been generally healthy during the year, no epidemic having appeared among them except whooping cough, which has been bad, especially amongst the children, and has been the means of a number of deaths amongst them.

Population.—There has not been any change in the population since last census: the Chippewas have a population of six hundred and twenty-five and the Pottawattamies one hundred and seventy-nine.

Education.—There are three schools on the reserve conveniently situated and well kept, so that there is no excuse for the children not getting an education, but the parents are very backward about sending them to school. A number of the larger children are attending the Mount Elgin Institute and Shingwauk Home. The three teachers of the schools are native-born and are well qualified for the position.

Religion.—There are two churches on the reserve, Anglican and Methodist. Divine service is held every Sunday, both morning and evening, and is well attended.

Health and Sanitation.—The people are giving a good deal of attention to cleanliness in and around there premises; there is a marked improvement in this respect of late years.

Characteristics and Progress.—Generally speaking, the Indians of this reserve are industrious and law-abiding. They are making progress.

Temperance and Morality.—It is to be regretted that a few of the Indians use intoxicating liquor, and the marriage law is not observed as well as it should be.

Sugar Beets.—There has been a factory erected for the manufacture of sugar at Wallaceburg, five miles from the reserve, that will give employment to all that want to work, at good wages, and will be a means of giving employment to all not only on the mainland, but as soon as the Indians get their land in order for raising sugar-beets, there will be no necessity for any of them leaving the reserve, as they can find all the employment they want at home.

Crops.—The prospects in the forepart of the summer were great, but, owing to its raining nearly all the time during the months of June and July, the wheat crop is practically spoilt. Oats will be a fair crop, corn good, also hay and potatoes; apples and other fruits are good; the crop of vegetables good. There are very few sugar-beets raised this year, but what there is are good.

Public Improvements.—There has been a dock built on the River St. Clair this year, which has been the means of bringing a good revenue to the Indians. Excursion boats stop at the dock twice a week during the summer season. The Indians meet the boat each time and dispose of their wares to good advantage.

I have, &c.,

J. B. McDOUGALL,
Indian Agent.

PROVINCE OF QUEBEC,
ABENAKIS OF BECANCOUR,
BECANCOUR, August 14, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit herewith my annual report and statistical statement for the year ended June 30, 1902.

Reserve.—The reserve of the Abenakis of Becancour is situated on the west side of the Becancour river, in the parish of Becancour, county of Nicolet. It has an area of exactly 148·63 acres.

Tribe.—The Indians of this band call themselves the 'Abenakis of Becancour'.

Vital Statistics.—The population of this band is fifty-one (including absentees) consisting of thirteen men, twenty-four women and fourteen young people under the age of twenty-one years. There have been no births nor deaths during the year.

Resources and Occupations.—The occupations of these Indians consist of cultivating their land and making baskets in summer, in working in the shanties in winter, and in stream-driving in spring.

Buildings.—The buildings are improving a little each year.

Stock.—The number of the stock has hardly increased. The Indians own four horses, some cows, pigs and poultry.

Agricultural Implements.—The Indians are adding to the number of their agricultural implements.

Health.—There has been no epidemic on the reserve this year, and most of the Indians enjoy good health.

Education.—The members of this band take very little interest in the education of their children in spite of the school being near at hand.

Religion.—All these Indians are Roman Catholics. They attend the services of the parish church, but many of them are not very attentive to their religious duties.

Characteristics.—The Indians of this agency are fairly industrious and easily obtain work, but their conditions of life improve very little on account of their improvidence. They are generally poor.

Temperance and Morality.—In the matter of temperance, affairs are always in the same condition ; however, there has been no serious disorder caused by liquor.

The morality of these Indians is good.

I have, &c.,

H. DESILETS,
Indian Agent.

PROVINCE OF QUEBEC,
ABENAKIS OF ST. FRANCIS,
ST. FRANÇOIS DU LAC, July 7, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit herewith my annual report and statistical statement for the year ended June 30, 1902.

Reserve.—The reserve of the Abenakis of St. Francis is composed of several pieces of land situated in the seigniories of St. François du Lac and Pierreville. The area of the reserve is one thousand eight hundred and nineteen acres and fifty-two perches.

The portion of the reserve upon which the Abenakis reside is designated by the number 1217 on the official plan of the parish of St. Thomas de Pierreville, and contains one thousand two hundred and twenty-eight acres. The village stands on the east bank of the River St. Francis, about six miles from its discharge into Lake St. Peter. It has a very picturesque site.

Tribe.—The Indians of this band call themselves the 'Abenakis of St. François de Sales.'

Vital Statistics.—This band is composed of three hundred and thirty-nine persons, consisting of eighty-five men and eighty-six women over twenty-one years of age, and eighty-two boys and eighty-six girls under that age.

During the year there were ten births and twelve deaths.

Health and Sanitation.—There have been no contagious diseases or epidemics during the year, with the exception of one family that had small-pox, and the sanitary precautions that were taken prevented the spread of the disease. Most of the Indians enjoy good health.

The situation of the village is very healthful. The houses are clean and kept in good order.

Occupations.—The chief occupations of the Abenakis consist of basket-making and fancy work. They make baskets all winter, and about the month of June most of the families go to summer resorts in the United States, especially to the Atlantic coast and to the White mountains, as well as in the province of Ontario, to sell their articles. They return in the fall. This commerce is their chief source of revenue.

There are also some families that hunt as well as sell baskets, but the number of those that follow this mode of making a living is decreasing each year in proportion as the game becomes scarcer

Farming is only a secondary occupation amongst the Abenakis of St. Francis. Some of them do not cultivate the soil at all; others raise some vegetables, such as potatoes, Indian corn, &c. A few families cultivate a little more, but the sale of their baskets, which compels them to be absent during most of the summer, prevents their giving cultivation the attention that is required.

Buildings, Stock and Farming Implements.—The buildings are for the most part fairly good, and in the village there are some very pretty and very comfortable houses.

The Abenakis own four horses, a large number of good cows, and some pigs.

They have very few farming implements.

Education.—The education of the children receives much attention. Most of the Indians can read and write, and a good number of them have been through a course at college or in some other higher institution of learning. There are two schools on the reserve: one Roman Catholic, under the direction of the Rev. Sister Marie Josephine; the other, Protestant, under the charge of the Rev. H. O. Loiselle. These two schools are well managed and afford an excellent education to a large number of children.

Religion.—The Abenakis belong to various religious denominations: two hundred and fifty-six are Roman Catholics, fifty-one are Anglicans and thirty-two are Adventists. There are three churches on the reserve: one, Adventist, conducted by the Rev. Pierre Emmett; another, Anglican, under the charge of the Rev. H. O. Loiselle; and the third, Roman Catholic, under the charge of the Rev. Jos. de Gonzague. The Roman Catholic church, which has been standing for nearly a century, was unfortunately destroyed by fire two years ago. It had been partly raised from its ruins and opened for worship once more, thanks to the efforts of the Rev. Jos. de Gonzague, the zealous missionary, and of Chief Joseph Laurent, and to the generosity of a large number of other charitable persons, but there still remained much to be done to finish it and all the available means up to that time appeared to have been exhausted, when suddenly there arose a benefactor in the person of the Hon. Senator Quay, of Pennsylvania, who generously made a gift of $1,000 for the completion of the church and $500 to finish the presbytery, which also was only half finished.

Characteristics and Progress.—As a rule the Abenakis are hard-working and industrious. The making and sale of baskets brings them in a fair return of money to enable them to live comfortably, and some of them are rich. Each family returns in the fall with a good sum, and if they were more economical and less improvident, they would be able to put money by for hard times. Nevertheless several of them have built for themselves large and comfortable houses, and the village presents a very pretty appearance.

Temperance and Morality.—There has been very little disorder caused by the use of spirituous liquor, and the morality of the Abenakis is generally good.

General Remarks.—The Abenakis of St. Francis are as civilized as the white people of the surrounding district, and live in harmony with the latter.

Very few of the members of this band are pure Indians: all have more or less white blood in their veins. Many of them have lost the characteristics of the red man, and it is very difficult for those who see them for the first time to recognize them as Indians.

Nearly all of them speak English and French and use one or other of these languages in their intercourse with white people, but in the family and in their meetings and councils they speak the Abenakis language, which they preserve with religious care.

I have, &c.,

A. O. COMIRÉ,
Indian Agent.

PROVINCE OF QUEBEC,
ALGONQUINS OF RIVER DESERT,
MANIWAKI, July 22, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statistical statement for the year ended June 30, 1902.

Reserve.—The reserve of this band is situated in the northern part of the county of Wright, at the confluence of the Desert river with the Gatineau, and contains an area of forty-four tho sand six hundred and three acres, three roods and ten perches, excluding one thousand one hundred and forty-six acres and thirty perches surrendered for the benefit of the band.

Tribe.—The Indians of this band belong to the Algonquin tribe.

Vital Statistics.—There are three hundred and ninety persons belonging to this band: ninety-nine men, one hundred and four women, and one hundred and eighty-seven children. There have been six births and twelve deaths during the year, making a decrease of six since my last report, which is the smallest birth-rate recorded by me. The causes of deaths were four of old age, three of consumption, one in confinement, two of infantile disease and two by drowning.

Health and Sanitation.—The health of the Indians throughout the year was fairly good, with the exception of the few who contracted small-pox, of which there were about seventeen cases in all. There was only one case amongst the Indians resident on the reserve, owing to a thorough vaccination and a rigid quarantine; the other sixteen cases occurred at Baskatongue. The disease was of a mild type and there were no fatalities. The school is kept scrupulously clean, as also are the houses of the more progressive Indians. But there are a number of the less progressive who live in shanties which are not always in a good sanitary condition.

Resources and Occupations.—Although there are a number of the Indians of this band who farm considerably, there are none who rely solely on farming as a means of support. They are eagerly sought after by the lumbermen, as they are expert woodsmen and drivers, and many of them are engaged as bush rangers, for which occupation they obtain high wages. There are still a few who adhere to the old system of hunting and camping out. They also make baskets, canoes, moccasins and snow-shoes, the latter article being greatly in demand during the past year.

Buildings.—One house and a shanty were erected during the year.

Stock.—There has been no great change in stock during the year, all the cattle wintered well. The Indians are well supplied with horses, but do not seem to take interest in raising sheep and pigs.

Farming Implements.—There were purchased during the year two new mowers, one four-horse sawing-machine, and one threshing-machine, but the latter was unfortunately destroyed by fire with the owner's barn.

Education.—There are two schools on the reserve, but only one in operation. There is a fairly good attendance, and the pupils are progressing favourably under the tutorship of Miss Annie O'Connor, who is doing everything possible for the advancement of her pupils.

Religion.—The Indians of this band are all Roman Catholics and attend the Oblate mission at Maniwaki.

Characteristics and Progress.—Many of the Indians are industrious and are doing well. There is a small but steady inprovement in farming, but the high wages prevailing for the past year have enticed a great many of the young men to the lumber woods. The Indians are becoming more prosperous and self-sustaining every year. The roads on the reserve are in a fairly good condition. Path-masters are being appointed and most of the Indians work upon the roads.

Temperance and Morality.—There are a number of the Indians on this reserve who are addicted to drink, but this number is becoming less every year; there were four who took the pledge last year and who have become rigid abstainers.

The morality of the Indians is not of as high a standard as could be desired. The Indians may be divided into two classes: the greater part of them who reside on the reserve will compare favourably in morals with any nationality, but the morality of the camping and hunting class is of a very low standard.

I have, &c.,

W. J. McCAFFREY,
Indian Agent.

PROVINCE OF QUEBEC,
AMALECITES OF VIGER,
CACOUNA, July 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit my annual report accompanied by statistical statement in regard to the Amalecites of Viger for the year ended June 30, 1902.

Reserve.—This reserve is situated on the bank of the St. Lawrence near the village of Cacouna, but most of the Indians reside in different counties. That is why it is so difficult to obtain the census of them.

Vital Statistics.—There are one hundred and one Indians on this reserve. There was one birth and one death during the year.

Health and Sanitation.—The health of the Indians is fairly good, and sanitary regulations are well observed.

Occupations.—The chief occupation of these Indians is the making of baskets and snow-shoes and fancy wares. These last articles are made by the women and sold to travellers during the summer. The men do a little fishing and hunting. They also make snow-shoes in winter. For the most part they are very poor. The government supplies relief to the very poor amongst them, principally to widows, who are certainly very grateful, as the government does a great act of charity in relieving these poor unfortunate people.

There are, I believe, three families that cultivate the soil in the Metapedia valley; but I believe that their progress is slow owing to their great poverty.

Education.—The children go to school and to the convent, but there are few children on the reserve.

Religion.—All the Indians are Roman Catholics as far as I can make out.

Temperance and Morality.—Temperance is well observed with few exceptions. The morality of the Indians is excellent, especially of the women.

I have, &c.,

EDOUARD BEAULIEU,
Indian Agent.

Wood Got out and loaded by Stony Indians at Morley Station, Alta.

PROVINCE OF QUEBEC,
HURONS OF LORETTE,
JEUNE LORETTE, July 31, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit my annual report with tabular statement in regard to the Huron tribe and other Indians in my agency for the year ended June 30 last.

Reserves.—The Huron band still owns its three reserves as follows :—

1. That of the village of Lorette, containing thirty acres, where most of the Indians reside near their ancient chapel, which always attracts the attention of visitors.

2. The Quarante Arpents reserve, containing an area of one thousand three hundred and fifty-two acres. The proposed surrender of this reserve will very soon be an accomplished fact, and the Huron Indians, threatened with complete ruin of the industry from which they have been making a fairly comfortable living up to the present time, will, perhaps, receive therefrom advantages of which they have not dreamed up to the present time.

3. The Rocmont reserve in the county of Portneuf, containing an area of fifteen square miles, equal to nine thousand six hundred acres, is under license for the cutting of the pine and spruce timber to Mr. Atkinson, who, as in previous years, has renewed his lease with the department.

Vital Statistics.—Since my last report the population has increased by four. During the year there were ten births and six deaths, making the population four hundred and fifty-eight.

To this figure must be added the number of Indians of other tribes in my agency, which includes the counties of Quebec, Portneuf and Charlevoix.

At St. Pierre de Charlesbourg, county of Quebec, thirty-one Amalecites are living from day to day, occupying small and fairly suitable houses, and usually work by the day. The sale of Indian fancy wares that they used to make in the past having gone down little by little, they have almost given it up.

A group of the Abenakis, also residing in the county of Quebec, make a better living than the Amalecites, and are more given to the cultivation of the soil. They number twelve altogether.

The Abenakis of St. Urbain make a poor living. The Rev. Mr. Girard, curé of the parish where they reside, is very attentive to their needs, and always ready to notify me the moment that he sees they are in want. Some of these fifteen Indians receive help from the department.

The combined population of these four Indian communities is five hundred and sixteen.

Resources and Occupations.—Everything indicates that the best days of the special industry of the Hurons, that of making snow-shoes and moccasins, have passed away. During the course of the winter there was a short time when the orders kept this industry busy ; but the rest of the year there were none or almost none, and, as was the case last year, several members of the band had to go away to find amongst strangers the work necessary to maintain their families. Fortunately work was fairly plentiful, which enabled them to keep out of distress. There is no doubt that if this state of affairs continues, many families will find themselves obliged to forsake the village and go to another country. It will be very consoling if most of those who depend altogether on the industry for a living should decide to try the cultivation of the soil, and to take

advantage of the surrender that will soon be made. Their residence in the village will help to keep the rest of the band, who are inclined to scatter more and more.

The fancy wares are not much more in fashion than the industry and they no longer bring in much profit.

On the other hand the tourists who visit the lakes in the region of Lake St. John are each year becoming more numerous, and always encourage our Indians, whose skill they admire. They employ the latter for most of the summer season.

Hunting and fishing are becoming more difficult and less remunerative. The restrictions imposed by the provincial government with the object of protecting the forests and the lakes will soon interfere with these sources of revenue, and oblige those of the Indians who cling to the love of these two arts, of which they are masters, with a sentiment as strong as nature, to lease from the provincial government the lakes that it may leave at their disposal. This position is alarming to them, and they see with a lively regret that, pressed with the wind of intolerance, they will have to abandon the liberty that formerly guaranteed them the absolute enjoyment of these forests and of these lakes, with which they are as familiar as with their village. They had always hoped that the law of the province would make an exception in their case, but that has not yet been done.

Health and Sanitation.—The sanitary condition of the band in general is exceptionally favourable. There is no disease at present, and the cleanliness of the village evidently contributes to the maintenance of health.

A somewhat strange fact was observed during the course of the winter, when the disease of small-pox was most severe on all sides of the reserve. There was not a single case of small-pox in the village, although the teachers of the village school had been suffering from it, and one of them had been obliged to keep to her room for some time. The closing of the school during this time, complete isolation, general vaccination and other precautionary measures carefully observed, controlled its spread in a manner altogether exceptional.

An Indian, however, took the small-pox, but, what is a strange thing, he was then in the woods hunting, some hundreds of miles from the band, with his father. He was disinfected, and returned to the village in perfect health.

Education.—The progress that I mentioned in my last report has been constant, and the good teaching Sisters certainly deserve great praise. The school had to be closed for some time during the month of February for the reasons that I have mentioned above, but as soon as the danger disappeared it was reopened with great vigour and regularity, to the great satisfaction of the happy pupils on rejoining their classes. The progress that the pupils are making under the intelligent and skilful teaching of the Sisters will make them capable in the future, and will certainly enable them to take up occupations with advantage other than such as the precarious local industry.

Religion.—Abbé G. Giroux, missionary to the band, has not recovered his former health. Frequent attacks of paralysis have several times placed him in danger. Nevertheless, thanks to the devotion that he has always shown to the band since he has been missionary, the little that he has done has helped to keep the band to its duty, and by his curates religious services have been regularly conducted.

Morality and Temperance.—A charge was made before me during the course of the past year of the sale of liquor to an Indian. Proceedings were undertaken, and the offender was condemned, as he deserved. There has not been any disorder nor scandal, and I believe that no part of the surrounding parishes can boast of having had as complete peace and tranquillity. Temperance is observed and morality is equally safeguarded.

I have, &c.,

ANTOINE O. BASTIEN,
Indian Agent.

PROVINCE OF QUEBEC,
IROQUOIS OF CAUGHNAWAGA,
CAUGHNAWAGA, August 29, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit herewith my report for the year ended June 30 last, in regard to the Caugnawaga agency; also tabular statement in respect to the affairs of the band.

Reserve.—The reserve contains an area of twelve thousand six hundred and twenty-five acres, of which about four thousand are in timber and underbrush, and the rest is in common, under cultivation or in pasture.

As a rule the soil is of very good quality, and the stone taken out of the quarries is for the most part very good.

Vital Statistics.—There are on the reserve five hundred and forty-seven men, five hundred and thirteen women and nine hundred and fifty-seven children under twenty-one years, making a total of two thousand and seventeen.

During the year there were ninety-five births and seventy deaths, making an increase of twenty-five in the population.

Health and Sanitation.—There has been no epidemic on the reserve, although there were some isolated cases of small-pox that were placed under quarantine to prevent their spread. The people are enjoying good health.

Resources and Occupations.—Farming, bead-work and the making of lacrosses are the principal resources of these Indians, as well as work in the quarry.

The Indians engage in farming, the taking of rafts down the Lachine rapids, and many of them are employed by the Iron Bridge Company and in other works at Lachine, all of which give them a pretty fair revenue.

The general industry is bead-work by the women and the making of lacrosses and snow-shoes by the men.

Buildings and Agricultural Implements.—The Indians of the reserve for the most part have good buildings and use agricultural implements the same as their French Canadian neighbours in the cultivation of their land.

Education.—There are four hundred and eight children of an age to attend school. Of this number two hundred and three have attended fairly regularly, and they have made more progress than in previous years. There are two Roman Catholic schools, one for boys under the charge of a master, and one for girls under the direction of a school mistress and an assistant. There is also a Methodist school for boys and girls, under the charge of a master.

Religion.—There is a Roman Catholic church and two missionaries for the conducting of services. There is also a resident clergyman on the reserve.

Characteristics and Progress.—The Indians are industrious and fairly skilful. There has been much progress in their work and in their manner of living.

Temperance.—There has not been any progress in this matter. I do not see any improvement; however, the Indians are fairly peaceable.

General Remarks.—The affairs of the band in general have been satisfactory, and living fairly easy during the year for most of the inhabitants of the reserve.

I have, &c.,

A. BROSSEAU,
Indian Agent.

PROVINCE OF QUEBEC,
IROQUOIS OF ST. REGIS,
ST. REGIS, July 4, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit my report and statistical statement for the year ended June 30, 1902.

Reserve.—This reserve is situated on the banks of the St. Lawrence river, in the province of Quebec, opposite the town of Cornwall, Ontario, including islands a little below Prescott, Ontario, thence down stream opposite the village of Lancaster, Ontario, on the opposite shore is the village of St. Anicet, in the province of Quebec. It contains an area of about seven thousand one hundred and twelve acres.

Vital Statistics.—The population consists of three hundred and six men, three hundred and two women, and seven hundred and seventy-eight young people under twenty-one years of age, making a total of thirteen hundred and eighty-six. During the year there were thirty-three births and twenty-three deaths, making an increase of ten.

Sanitary Condition.—There was no epidemic on the reserve during the year, and the sanitary condition of the band has been good.

Resources and Occupations.—The principal occupations of these Indians are farming, hunting, fishing, trapping, acting as guides for tourists, running rafts of timber, doing day labour with farmers and on railways; also manufacturing lacrosse sticks and baskets to a large extent.

Agricultural Implements.—The Indians are well supplied with agricultural implements.

Education.—There are two schools on the reserve in operation: one on Cornwall island, and the other at St. Regis village. The pupils that attend regularly are making fair progress, but the parents' lack of interest in sending their children to school makes progress difficult in general. The schools are well supplied with school material and good teachers.

Religion.—There are two churches on the reserve, one Roman Catholic and one Methodist; the Methodist on Cornwall island, and the Roman Catholic at St. Regis village. There are two missionaries, one for each of the denominations named. The Indians are very attentive to their religion.

Characteristics.—The Indians are making fair progress in agriculture and erecting buildings and such like.

Temperance.—Temperance has not progressed during the year, that is with a certain number; on the other hand there are many who do not make use of intoxicants; those that do will have liquor if it can be had for money.

I have, &c.,

GEORGE LONG,
Indian Agent.

PROVINCE OF QUEBEC,
LAKE OF TWO MOUNTAINS AGENCY,
OKA, August 25, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to present my report on the Indians of Oka for the year ended June 30, 1902.

Reserve.—The reserve of these Indians is situated on the Lake of Two Mountains, Ottawa river, in the province of Quebec.

Vital Statistics.—The population is four hundred and fifty-four, consisting of one hundred and forty-three men, one hundred and eleven women, and two hundred children and young people under twenty-one years. There were fifteen births and thirteen deaths during the year, making an increase of two.

Health and Sanitation.—The Indians suffered from scarlatina and diphtheria and from consumption, the last of which carried off several of them.

Occupations.—For a living these Indians cultivate the soil, make barrel hoops, baskets, moccasins, mitts, lacrosses, and many of them go to the shanties and do other work by the day amongst the farmers.

Education.—There are two schools on the reserve, one conducted by Miss E. N. Williams, the other by J. Henderson. Both teachers have the necessary qualifications to teach, but the indifference of the parents about sending their children is the great obstacle to the progress of the latter.

Religion.—The Methodists conduct divine service in the school-house, which is very unsuitable. The Roman Catholics go to the parish church. These Indians take a lively interest in spiritual affairs.

Characteristics.—These Indians have made some progress in cultivation and in their buildings, but many of them are very badly off for farming implements.

Temperance and Morality.—A great many of these Indians are men who do not drink ; those that are most given to drink are young men.

Most of the Indians observe the laws of morality.

I have, &c-,

JOSEPH PERILLARD,
Indian Agent.

PROVINCE OF QUEBEC,
MICMACS OF MARIA,
MARIA, July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit my report for the year ended June 30 last, also statistical statement, in regard to the affairs of the Micmacs of my agency.

Reserve.—The reserve of my Micmacs comprises four hundred and sixteen acres, of which one hundred and thirty-four are under cultivation ; the rest is in young trees, The greater part of this land is cultivable, and the soil is fairly good.

Vital Statistics.—The population of this reserve is one hundred and five. This is an increase of three during the year. There were three births and no deaths.

Health and Sanitation.—There was no contagious disease this year, and the Indians have enjoyed fair health. As small-pox was raging in several parishes in the county of Bonaventure, I had a large number of the Indians vaccinated.

Resources.—The resources of these Indians are agriculture, fishing for eels in the Grand Cascapedia and in the Baie des Chaleurs, hunting for beaver, mink and marten in the winter. Many of the Indians work in the shanties, driving the logs; while others are employed by the farmers in the neighbourhood. Some of them make baskets, snow-shoes, prepare skins, and make a great variety of small articles that they sell to white people.

Buildings and Farming Implements.—As a rule most of the buildings are not of much value with the exception of those of four or five Indians who have rather neat houses.

The Indians have very few agricultural implements.

Education.—There is a good school on the reserve, where the children might receive a good education if it were better attended. Both English and French are well taught there, and the pupils that attend school regularly make marked progress.

Religion.—All the Micmacs of my agency are Roman Catholics. They practise their religion very well. At the present time the curé of the new parish of St. Jules attends to their spiritual wants.

Characteristics and Progress.—As a rule the Indians are industrious and skilful; but, although they earn a good deal, they are always poor. This is due to their lack of economy and to their improvidence.

Temperance and Morality.—As a rule the Micmacs are much given to intemperance, their strongest inclination is in that direction. It requires a constant supervision to keep them from drunkenness.

Their morality is good.

I have, &c.,

J. GAGNÉ, Priest,
Indian Agent.

PROVINCE OF QUEBEC,
MICMACS OF RESTIGOUCHE,
POINTE À LA GARDE, September 8, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to present my report for the year ended June 30 last.

Reserve.—This reserve, which contains eight thousand eight hundred and fifty-six acres, of which about seven hundred and twenty are under cultivation, is situated on the north shore of the Restigouche river in the county of Bonaventure.

Tribe.—The Indians of this band belong to the Micmac tribe.

Vital Statistics.—The population of this band is now four hundred and seventy-six, an increase of two since last year.

Health and Sanitation.—The Indians of this band generally enjoy good health, with the exception of some cases of consumption. There are no epidemics. The sanitary precautions recommended by the department have been carefully carried out. The houses and their surroundings are kept very clean.

Religion.—These Indians, who are all Roman Catholics and much attached to their religion, have for their clergy the Rev. Capuchin Fathers, who take great interest in them.

Education.—There is a school on this reserve conducted by a young Indian woman, Miss Isaac, the daughter of the present chief. She teaches English, French and Micmac. The progress of the pupils is satisfactory.

Progress.—These Indians take much more than formerly to the cultivation of the soil; those who have enough land cultivate well, they are moreover hard-working.

Temperance and Morality.—The habits of these Indians are good; as a rule they are peaceable people when they are sober: unfortunately many of them have too strong a taste for intoxicating liquor. Many, however, have joined a temperance society, which I hope will have good effects.

I have, &c.,

JEREMIE PITRE,
Indian Agent.

PROVINCE OF QUEBEC,
MONTAGNAIS OF LOWER ST. LAWRENCE—BERSIMIS AGENCY,
BERSIMIS, August 18, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the fiscal year ended June 30, 1902, for my agency of the Lower St. Lawrence, comprising the bands residing at Escoumains, Bersimis and Seven Islands.

ESCOUMAINS BAND.

Reserve.—This reserve is situated on the southwest side of Escoumains river, on the north shore of the St. Lawrence, in the county of Saguenay, and comprises an area of ninety-seven acres.

Tribe.—The Indians of this band are all of the Montagnais tribe.

Vital Statistics.—The population numbers forty persons, consisting of ten men, eleven women and nineteen children.

Health and Sanitation.—The health of the Indians of this band has been fairly good throughout the year. Their houses and premises are kept clean.

Occupations.—The chief occupations of these Indians are fur-hunting in winter, acting as guides to sportsmen and fishing in summer.

Education.—There is no school on the reserve, and none of the Indians can read or write except their own language, although nearly all can speak French.

Religion.—All the Indians of this band are Roman Catholics, they have no church, but attend the church of the parish of Escoumains.

Progress.—I can not say that this band is making much progress.

Temperance and Morality.—All the Indians of this band are very temperate, none are addicted to strong drink and all are very moral and law-abiding.

Bersimis Band.

Reserve.—This reserve is situated on the east side of Bersimis river on the north shore of the St. Lawrence, in the county of Saguenay. The area comprises sixty-three thousand one hundred acres.

Tribe.—The Indians of this band are all of the Montagnais tribe.

Vital Statistics.—The population is this year four hundred and sixty-five, composed of one hundred and forty-two men, one hundred and thirty-three women, and one hundred and ninety children. The increase in the population is the result of a few Indians having come to Bersimis this summer from other places.

Health and Sanitation.—The health of this band has not been very good this year. Many are consumptive. The majority of the band keep their houses and premises clean as far as possible for them.

Occupations.—The only occupation of these Indians is fur-hunting. The greater number of them come out of the woods in the end of June and go back to their hunting grounds in the end of August and the beginning of September ; but this year many came out of the woods in July. The hunting this year was fairly good, better than last year, and the prices paid for furs by traders this year are good.

Education.—There is a good school on the reserve conducted by two nuns. The children who attend school are learning fairly well.

Religion.—All the Indians of this band are Roman Catholics. They have a very good little church on the reserve, which is always kept in good order by the three missionaries residing with the band.

Progress.—I can not say that the Indians of this band are making any progress ; they do not care much for anything else than hunting.

Temperance and Morality.—I am sorry to say that a great number are addicted to strong drink and spend part of their money in drink, which if employed in the right way would procure them the necessaries and comforts they often need, and prevent diseases among them.

Seven Islands Band.

Reserve.—This band has no reserve.

Tribe.—The Indians of this band are all of the Montagnais tribe.

Vital Statistics.—The population consists of three hundred and seventy-seven souls.

Health and Sanitation —The health of the members of this band has been fairly good this year. Their houses and premises are kept clean.

Occupations.—The only occupation of this band is fur-hunting.

Education.—These Indians have no school. Some of them can speak French, and a few can speak a little English.

Religion.—All the Indians of this band are Roman Catholics. They have a church.

Temperance and Morality.—Many of the Indians of this band are addicted to strong drink.

I have, &c.,

ADOLPHE GAGNON,
Indian Agent.

PROVINCE OF QUEBEC,
TIMISKAMING AGENCY,
NORTH TIMISKAMING, July 24, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of the Timiskaming band, for the year ended June 30, 1902.

Reserve.—The Timiskaming reserve is situated on the north bank of the River Quinze, at the head of Lake Timiskaming, county of Pontiac. It formerly comprised an area of thirty-eight thousand four hundred acres, but twenty-three thousand and seventy-five acres have been surrendered, leaving fifteen thousand three hundred and twenty-five for the use of the band; of the above quantity, the Indians have located three thousand two hundred and seventy-seven acres.

Tribe.—These Indians are nominally Algonquins, but about two-thirds of them are half-breeds with a large percentage of Scotch blood.

Vital Statistics.—The population of this band is two hundred and five, consisting of forty-three men, fifty-four women, and one hundred and eight young people under twenty-one years of age. During the year there were five deaths and six births, also two joined the band through marriage, making a total increase in the number of persons comprising this band, of three in the year.

Health and Sanitation.—The health of the band has been fairly good. Sanitary measures are pretty well observed by the Indians.

Resources and Occupations.—The principal industries engaged in by the greater part of the band are: agriculture, acting as guides for tourists in summer, working in lumber camps during winter, and on the timber drives in spring, and a few of the Indians build bark canoes for sale, and do some trapping, but fur-bearing animals are becoming scarce.

Buildings.—Four new buildings were erected during the year, and some of the others improved a little.

Stock.—There has been but little increase in number or improvement in the quality of the stock during the year.

Farming Implements.—The band is very well supplied with farming implements.

Education.—There is one school on the reserve. It is conducted by Mr. J. J. MacCarragher, who has proved himself to be an efficient teacher, but some of the parents on the reserve seem to be quite indifferent to the advantages of education; therefore, the attendance of pupils at school is not as large as it should be. Some of those that attend regularly are making very fair progress.

Religion.—The Indians of this reserve are all Roman Catholics. The church, which is a very neat edifice, was built on a portion of the reserve that has since been surrendered and sold to the Roman Catholic clergy. The Indians are very regular in their attendance at church.

Characteristics and Progress.—Some of the Indians are industrious, while others are indolent and improvident, but as a whole they are progressing slowly.

Temperance and Morality.—The Indians of this band are not much addicted to drinking intoxicating liquor, except four or five individuals. They have been quiet for some time.

There have been but few cases of immorality brought to my notice.

I have, &c.,

ADAM BURWASH,
Indian Agent.

New Brunswick,
Northeastern Division,
Richibucto, July 26, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I beg to submit my annual report and statistical statement for the year ended June 30, 1902.

Location of Agency.—This agency is in northeastern New Brunswick and embraces the Indian reserves in the counties of Restigouche, Gloucester, Northumberland, Kent and Westmoreland.

Reserves.—The reserves are: Eel River reserve, in Restigouche county; Pabineau, St. Peter's Island and Pockmouche reserves, in Gloucester county; Burnt Church, Tabusintac, Eel Ground, Red Bank, Indian Point, Big Hole and Renous reserves, in Northumberland county; Big Cove, Indian Island and Buctouche reserves in Kent county; Fort Folly reserve, in Westmoreland county.

Eel River Band.

Reserve.—This reserve is situated about three miles from the town of Dalhousie. It has an area of two hundred and twenty acres, of which but a small portion is cleared, the remainder being woodland.

Vital Statistics.—The population of the band including those who have removed from the reserve and are living in the vicinity, is forty-eight. There has been no change in the population during the year.

Sanitation.—A short time ago every member of the band, except one or two, was vaccinated. This was fortunate, as small-pox has lately broken out among them and all the members of the band living on the reserve have been isolated and their premises quarantined. Thus far there have been no deaths.

Occupations.—Some of these Indians obtain employment in the lumber mills. Others live by the manufacture of Indian wares, and by begging. Very few pay any attention to farming, except to plant a few garden vegetables and potatoes for their immediate use.

Buildings.—Their dwellings are poor and cheaply built. A number of those who have obtained employment off the reserve have built shanties and moved with their families nearer their work.

Stock.—These Indians have no stock.

Farming Implements.—They have no farming implements.

Characteristics and Progress.—I regret that I cannot report any progress made by these Indians.

Bathurst Band.

Reserves.—These Indians occupy two reserves, one, the Pabineau reserve, being about seven miles from the town of Bathurst, and the other, St. Peter's reserve, about half a mile from the town. The Pabineau reserve contains about one thousand acres, the greater portion of which is woodland. There is also some timber growing on this reserve. The Indians formerly all lived here, but all except three families have left and settled on St. Peter's island. This island contains sixteen acres, nearly all of which is cleared. It is separated from the mainland by a passage about half a mile wide.

Vital Statistics.—The population of this band is thirty-six. There have been two deaths and one birth during the year.

Health and Sanitation.—These Indians have all been vaccinated. There have been no epidemics during the year. There has been some sickness due to chronic diseases.

Resources and Occupations.—These Indians gain their living chiefly by the manufacture of Indian wares, and by begging. They do a little farming. The Indians on Pabineau reserve pay more attention to agriculture than the island Indians do.

Buildings.—Those who remained on Pabineau reserve have comfortable dwellings. The dwellings of those residing on St. Peter's island are small and cheaply built.

Stock.—These Indians have very little stock.

Farming Implements.—They have very few farming implements.

Education.—They pay no attention whatever to education.

Characteristics and Progress.—They are making no progress whatever beyond gaining a bare livelihood.

Burnt Church Band.

Reserve.—This reserve is situated on the north side of Miramichi bay fronting on the bay, about thirty miles from the town of Chatham. The shore at this point is high and the reserve dry and pleasantly located. It contains about two thousand and fifty-eight acres. The Indians occupy about two hundred and fifty acres. The remainder is covered with wood, principally spruce; there is some timber.

Vital Statistics.—The population of this band is two hundred and twenty, a decrease of ten in the year. There have been seventeen deaths and eight births. One woman married and left the band. Of the total population, sixty-six are men and sixty women. There are forty-nine children of school age.

Health and Sanitation.—In the spring these Indians carefully cleaned and lime-washed their dwellings and removed from their premises the filth and garbage accumulated during the winter. Their houses present a neat and clean appearance. There has been no epidemic during the year, but consumption has carried off an unusually large number.

Resources and Occupations.—These Indians nearly all engage in sea-fishing. They also do some farming, but owing to the extreme drought last season, a very small crop was harvested. They also manufacture Indian wares.

Buildings.—The dwellings are generally comfortable, but small. There is a church and a school-house on the reserve, and the Indians have under construction a building to be used as a council-house and for other purposes.

Stock.—The greater number of these Indians have no stock.

Farming Implements.—About a dozen of these Indians are supplied with farming implements.

Education.—They have one school on the reserve taught by Miss Bessie Dalton. Some of the Indians take an interest in the education of their children; others do not. Many of them live too far from the school to send their children, particularly in the winter season.

Characteristics and Progress.—These Indians are more industrious than some of the other bands, but sickness has done much to keep them back this last year. A few have made some progress during the year. In this respect I might mention Noel Ginish, who has a farm with a good dwelling and outhouses, and is supplied with farming utensils, machinery and stock.

Eel Ground Band.

Reserve.—This reserve is situated on the north bank of the northwest branch of the Miramichi river, about six miles above Newcastle. It contains two thousand six

hundred and eighty-two acres, about two hundred and twenty-five of which are cleared. The remainder is wood and timber land. The soil is fertile.

Vital Statistics.—The population is one hundred and forty-four, an increase of five for the year. There have been six births and four deaths. Three Indians from outside have joined the band. The men number fifty-three and the women thirty-six. There are twenty-three children of school age.

Health and Sanitation.—These Indians have also been careful to remove all refuse matter and garbage gathered around their dwellings during the winter. Nearly all have cleaned and limewashed their houses. The health of the band has been good, except in the winter and spring, when there was a great deal of sickness, chiefly pulmonary and bronchial troubles.

Resources and Occupations.—Many of these Indians engaged in the lumber woods last winter and in spring they made good wages stream-driving. They also receive employment in the mills and lumber-yards during the summer season. Fishing, farming and the manufacture of Indian wares are also engaged in.

Buildings.—Their dwellings are small. They have a church and a lock-up on the reserve.

Stock.—Very few of these Indians have any stock.

Education.—The school-house on this reserve was burned a short time ago. The fire was caused by a bush fire in the vicinity. The school desks and furniture were saved and removed to a room in the chief's house, where the school has since been conducted. Miss Lucy B. Walsh is the teacher.

Characteristics and Progress.—I regret I cannot report much progress during the year. These Indians are in very much the same condition as they were last year.

Red Bank Band.

Reserve.—This reserve is situated on both sides of the Little Southwest Miramichi river, about fifteen miles above Newcastle. It is well wooded with soft and hard wood timber and fire-wood. The reserve contains six thousand one hundred and fifty acres. The land near the river is fertile, but in some places it is stony and poor. The Indians occupy only about fifty acres.

Vital Statistics.—The population is forty-nine, a decrease of one since last year caused by the death of an Indian boy by drowning.

Health and Sanitation.—The health of these Indians has been good. In the spring their dwellings were thoroughly cleaned.

Resources and Occupations.—These Indians are engaged chiefly in farming, fishing and lumbering. Some of them make good wages acting as guides for sportsmen hunting and fishing on the upper Miramichi river

Buildings.—The dwellings are small but comfortable. There is a church on the reserve.

Stock.—A number of these Indians own horses, but very little other stock.

Farming Implements.—Four of these Indians are supplied with farming implements.

Education.—Very little attention is given to education.

Characteristics and Progress.—The members of this band are amongst the most progressive Indians in this agency. Chief John Tenas, who has recently been re-elected, sets a good example to this band in this respect.

Big Cove Band.

Reserve.—This reserve is situated on the north bank of the Richibucto river about twelve miles from the town of Richibucto. It contains two thousand two hundred and two and three-quarter acres, a great part of which is fertile land. The Indians have

cleared and occupy about three hundred acres. The remainder consists of woodland with some spruce and hemlock timber scattered throughout, and a quantity of bog land.

Vital Statistics.—The population of this band is two hundred and eighty-three. It is the largest band in the maritime provinces. There have been seven births and ten deaths during the year. A family of five from Indian Island reserve joined this band last fall. There are eighty-three men and seventy-seven women. Of the children sixty-four are of school age.

Health and Sanitation.—There was a great deal of sickness in this band during last fall and winter. An epidemic of measles broke out in the fall and continued all winter. There were also and still are several cases of consumption. Care was taken in the spring to clean the dwellings and premises of these Indians thoroughly, and in many cases to limewash the houses. A set of rules for health and on cleanliness printed in the Micmac language was distributed among these and the other Indians in this agency for their guidance.

Resources and Occupations.—These Indians all engage to a limited extent in farming, but owing to the extreme drought of last summer very little grain was harvested. They also engage in the smelt and eel fishery in winter and in deep-sea fishing in summer. Many of them leave the reserve in the summer and settle in shanties in Bass river and Rexton near the lumber mills, where they secure employment in the mills and in loading vessels. They also manufacture and sell Indian wares.

Buildings.—The buildings are small and some of them not very comfortable. There is a church, school-house and lock-up on the reserve and a public hall is under construction.

Stock.—Not more than a dozen of these Indians have any stock.

Farming Implements.—They have very few farming implements.

Education.—There is a school on this reserve, which is doing good work. Miss Mary N. Babin is the teacher. These Indians are beginning to take more interest in the education of their children than they formerly did.

Characteristics and Progress.—These Indians, like all the others in this agency, are not very industrious and are in very much the same condition they were years ago, neither richer nor poorer. So long as they have their present necessities supplied, they do not trouble themselves about the future.

Indian Island Band.

Reserve.—This reserve is situated near the mouth of Richibucto river and contains one hundred acres. About twenty-five acres are under cultivation, the remainder being covered with small spruce and fir. The land is low and sandy.

Vital Statistics.—The population is thirty-four, a decrease of six for the year, caused by one death and the removal of a family of five from Indian island to Big Cove.

Health and Sanitation.—The health of this band during the year has been good, except in the case of three families. The chief, an old man approaching ninety years of age, has been an invalid for the past three years. These Indians cleaned their dwellings and premises last spring.

Resources and Occupations.—These Indians are all engaged in deep-sea fishing in summer and in smelt and oyster fishing in winter. They do some farming, but devote most of their time to fishing.

Buildings.—Their buildings are small. They have a church on this reserve.

Stock.—They have very little stock.

Farming Implements.—They have very few farming implements.

Education.—A number of the Indian children of this reserve attend an adjoining white school. These Indians are more industrious than some of the other bands.

Buctouche Band.

Reserve.—This reserve is situated on the Buctouche river about three miles above the village of Buctouche. It contains three hundred and fifty acres, of which about fifty are cleared, the remainder being covered with a growth of small wood. The soil is fertile.

Vital Statistics.—The population is the same as last year, twenty-seven. There was one birth and one death during the year.

Health.—There has been sickness during the year among all the families of this band, chiefly cases of chronic lung complaints.

Resources and Occupations.—These Indians earn their living by fishing, selling Indian wares, and by begging. They all do some farming.

Buildings.—They live in small frame houses and shanties.

Stock.—They have no stock.

Education.—All the children of this band attend a neighbouring white school.

Characteristics and Progress.—These Indians are making no progress whatever. Sickness among them has much to do with their present condition.

Other Reserves.

The other reserves in this agency are not occupied by the Indians with the exception of Fort Folly reserve in Westmoreland county, on which three Indian families reside. Pockmouche reserve, in Gloucester county, and Tabusintac reserve, in Northumberland county, belong to the Burnt Church band. The Pockmouche reserve contains two thousand four hundred and seventy-seven acres, chiefly woodland growing small pine and spruce. Tabusintac reserve contains eight thousand and seventy-seven acres of wood and timber lands, growing spruce, pine, cedar, hemlock and hardwoods. Half of the Big Hole reserve, in Northumberland county, belongs to the Eel Ground band and half to the Red Bank band. It contains six thousand three hundred and three acres, part of which is covered with wood and timber and part with scrub pine. There is a valuable salmon-fishing privilege in connection with this reserve. Renous reserve, consisting of one hundred acres of woodlands, belong to Eel Ground band, and Indian point, consisting of one hundred acres, also of woodland, belongs to Red Bank band. Fort Folly reserve, on the Petitcodiac river, consists of sixty-two and a half acres of land, only a strip of which along the river is suitable for agriculture, the remainder consisting of high, stony land covered with spruce wood.

Indians not settled on Reserves.

There are a number of Indians at Dorchester, Shediac, Moncton and Salisbury, in Westmoreland county, not living on reserves. They live in shanties and gain a livelihood by manufacturing and selling Indian wares, and by begging. They number seventy-three, a decrease of one for the year, caused by one death.

Religion.—The Indians of this agency are all Roman Catholics and are strongly attached to their church. They all observe the festival of St. Anne on July 26, keeping up the festivities for two or three days later. I have to acknowledge the great assistance given me in the discharge of my duties among them by Rev. E. J. Bannon, missionary at Big Cove, Rev. Wm. Morrisey, at Burnt Church, and Rev. P. Duffy, at Eel Ground and Red Bank.

Temperance and Morality.—A large number of the Indians do not touch intoxicants. There are some, however, who succeed in obtaining liquor and getting drunk notwithstanting all efforts to prevent it.

They are in general moral, peaceable and law-abiding.

I have, &c.,

WM. D. CARTER,
Indian Superintendent.

NEW BRUNSWICK,
NORTHERN DIVISION,
FREDERICTON, July 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statistical statement for the year ended June 30, 1902.

EDMUNDSTON BAND.

Reserve.—This reserve is situated in Madawaska county. It fronts on the River St. John. It has an area of seven hundred and twenty acres, of which five hundred and twenty-two acres are forest-lands, chiefly covered with a second growth. The remainder, some two hundred acres, consists of pasturage, high land and intervale, the latter being well adapted for farming purposes.

Population.—The total number in the band is forty-six, an increase of eight due to the removal of a family from Tobique to this reserve.

Health and Sanitation.—The health of these Indians has been remarkably good, there having been no diseases of a contagious nature nor deaths amongst them during the past year. Their dwellings are of modern style, they are comfortable, and both neat and cleanly kept. Instructions relating to the removal of refuse were attended to in April last.

Resources and Occupations.—The principal occupations from which the Indians derive a living are farming, milling, hunting, acting as guides, and the manufacture of Indian wares. This reserve is well adapted for agricultural purposes, the soil of both the high land and intervale being rich and free from stone. A few of the band are devoting more attention to farming than formerly; others prefer the various employments named on account of a speedy return to meet their needs. Their crops consist chiefly of potatoes, buckwheat, oats, turnips and hay, all of which were a fair average and well harvested.

Temperance and Morals.—The morals and habits of the Indians are good.

Education.—A few of the children are attending the free school in this district. It is to be regretted that others will not follow their example.

Religion.—All the Indians of this band are Roman Catholics. Their spiritual affairs are carefully attended to by the Rev. L. C. Damour.

General Remarks.—These Indians are peaceable and industrious, being largely self-supporting.

TOBIQUE BAND.

Reserve.—This reserve is situated at the junction of the Tobique and St. John rivers, in the county of Victoria. It consists of about fifteen thousand acres of forest and farming lands, extending along the St. John river from what is called Tobique rocks, to opposite the mouth of Aroostook river, a distance of eight miles, and in width from four to five miles. The land, especially that portion of it above the Tobique river, is very fertile and well adapted for farming, whilst the forest-lands are noted for the amount of timber they produce yearly.

Population.—The population of this band is one hundred and ninety-eight, a slight increase due to births being in excess of deaths during the past year.

Resources and Occupations.—The Indians of this reserve are very industrious and willing workers. They obtain a livelihood from such occupations as farming, guiding, working in the woods, stream-driving, rafting logs and running rafts from Tobique to Fredericton. Their labour is much sought after by employers, who pay them good wages. Farming is not engaged in to any great extent except by a few. The farming engaged in consists chiefly in the raising of potatoes, buckwheat, oats, barley and hay, sufficient to supply their needs. What most Indians prefer is employment that will give a speedy cash return. A few of the older Indians continue the manufacture of Indian wares, which are readily sold to farmers and traders in the vicinity of the reserve.

Stock.—They are owners of a number of good horses and cattle.

Health and Sanitation.—The general health of the band, excepting families subject to consumption, scrofula, and the like diseases, has been fairly good, and although many parts of the province have been visited with small-pox, I am pleased to state that these and all other Indians of this agency escaped this and all other diseases of a contagious nature. Sanitary measures were attended to by the removal of all winter refuse in the month of May last. Their dwellings are mostly all frame buildings, painted and neatly kept both within and without. The water used for domestic purposes is conveyed from springs on a hillside in rear of the village by two aqueducts that lead within easy reach of all families.

Temperance and Morals.—A few of the Indians occasionally indulge in the use of intoxicants, but in all other respects their morals are good.

Education.—There is a day school on the reserve conducted by Miss Priscilla M. Goodine, a painstaking teacher. The attendance, especially during the winter months was fairly good. The conduct of the children has been excellent, and the regular attendance has resulted in marked progress.

Religion.—All the Indians are Roman Catholics. Their spiritual affairs are attended to by the Rev. M. A. O'Keefe, parish priest of Grand Falls district. Their church is a neatly finished building and all the Indians are regular attendants.

General Remarks.—The Indians of this reserve are mostly young men: they are active, industrious and willing workers. This section of the province being a lumbering district, also the Tobique being noted as a fishing and hunting ground, employment of all kinds is plentiful and the services of Indians are always in good demand at fair wages.

I have, &c.,

JAMES FARRELL,
Indian Agent.

NEW BRUNSWICK,
SOUTHWESTERN DIVISION,
FREDERICTON, July 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statistical statement for the year ended June 30, 1902.

Agency.—This agency consists of four reserves situated in the counties of Carleton, York, and Sunbury.

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Threshing Scene—Indians of Mistawasis Reserve, Snake Plain; Carlton Agency, Sask.

Woodstock Band.

Reserve.—This reserve is situated three miles below the town of Woodstock; it fronts on the River St. John, and consists of two hundred acres of land, of which thirty acres are cleared for cultivation and pasturage; the remainder is forest-land.

Population.—The population including those at Upper Woodstock, is sixty-six, an increase of three, due to births being in excess of deaths during the year.

Health and Sanitation.—The health of these Indians has been fairly good, as no sickness of a contagious character occurred amongst them during the year. Sanitary measures were attended to by the removal of winter refuse in the month of May last. Their dwellings are mostly frame buildings. Their mode of living is more modern and very much improved on former methods.

Resources and Occupations.—The industries engaged in to earn a livelihood are the manufacture of Indian wares, coopering, working in the lumber woods, stream-driving, and some farming. Their wares are in good demand at fair prices in the town of Woodstock and amongst farmers in the vicinity of the reserve. The young men engage in lumbering and stream-driving, and usually earn from one dollar to one dollar and fifty cents per day. Farming is not engaged in to any great extent.

Temperance and Morals.—These Indians avoid the use of intoxicants. Their morals are good, and they are peaceable.

Education.—There is no school on the reserve and none of the children will attend the free school in the neighbourhood of their homes.

Religion.—All the members of the band are Roman Catholics, and are regular attendants at the church in Woodstock. Their spiritual affairs are carefully attended to by the Rev. Father Chapman, parish priest.

Kingsclear Band.

Reserve.—This reserve is situated in the parish of Kingsclear in the county of York. It consists of four hundred and sixty acres of land, of which one hundred acres are cleared, fenced and used by the band for farming and pasturage. The rest of the reserve is covered with a young growth of wood, from which the Indians procure fire-wood.

Vital Statistics.—The population of the band is one hundred and nine, an increase of three for the year.

Resources and Occupations.—The industries from which these Indians earn a livelihood, are the manufacture of Indian wares, milling, stream-driving, rafting timber, and farming. The crops raised by them consist chiefly of oats, potatoes, buckwheat, pease, beans and garden vegetables. Owing to the time bestowed at other employments only sufficient crops are raised to form part of their living. The young men of the band engage in the first named occupations, and are good stream and river workmen. Their services for this work are always in good demand at fair wages, and their earnings are of considerable benefit to their parents.

Buildings.—All the dwellings are frame buildings, which with surroundings are kept neat and clean. Additional improvements have been made to a number of them during the past year, by reshingling and the erection of kitchens, that add very much to both comfort and appearance.

Stock.—A few of the band are owners of good horses and cattle.

Temperance and Morals.—Their habits and morals are good. They are peaceable and much respected by their white neighbours.

Education.—The day school on this reserve is under the supervision of Miss Mary C. Monaghen, a teacher holding a second-class provincial license. The attendance of pupils for the past year, was very regular, and the progress made was most satisfactory.

Religion.—All these Indians are Roman Catholics. There is a neat church on the reserve, at which they are strict attendants. Their spiritual affairs are carefully attended to by the resident clergyman, the Rev. Father LaBlance.

St. Mary's Band.

Reserve.—This reserve is situated directly opposite the city of Fredericton, in the parish of St. Mary's, and fronting on the River St. John. It consists of but two acres of land.

Vital Statistics.—The population of the band is one hundred and twenty-three, an increase of seventeen compared with last year's report. This is due to the removal of Indians from other parts of the agency to this reserve.

Resources and Occupations.—The industries from which these Indians derive a living are milling, stream-driving, loading scows, freighting wood-boats, guiding, hunting, and the manufacture of Indian wares. In the summer season work is plentiful at good wages. In fact, steady employment is at this season available for all Indians who wish to work. A few of the band devote their labours to the making of canoes, baskets, firkins, snow-shoes and fancy bead-work, which are sold in Fredericton, at Marysville and St. John. The majority of the Indians, however, prefer the other industries, especially milling and the loading of scows, as better wages are obtained therefrom.

Farming.—The only farming engaged in is the cultivation of a few garden plots for the raising of early vegetables.

Health and Sanitation.—No disease of a contagious character appeared among the Indians during the past year. Considerable sickness, such as consumption, scrofula, grippe and its after-effects, however, were quite prevalent amongst them, especially during the winter months. Sanitary regulations received attention by the removal and burning of all dirt and rubbish in the latter part of May last.

Temperance and Morals.—Considering the situation of this reserve, its close proximity to the city of Fredericton and the village of St. Mary's, where liquor is both night and day easily procured, the abstention, habits and conduct of most of the band are good; a few of them, however, at certain times will indulge in the use of intoxicants. This evil is usually sharply dealt with as soon as discovered.

Education.—The school on this reserve is taught by Miss M. J. Rush, a teacher holding a second-class license. The attendance has been fairly good, and the children are making good progress in their studies.

Religion.—All the members of this band are Roman Catholics. Their spiritual affairs are attended to by the Rev. John Ryan, of St. Mary's village.

Oromocto Band.

Reserve.—This reserve is situated at Oromocto village, eleven miles below the city of Fredericton. It fronts on the St. John river, and consists of one hundred and twenty-five acres of land; of this thirty-two acres are farming and pasturage lands, the remainder is forest-lands.

Vital Statistics.—The population of this band is sixty-four, a decrease of twelve that have removed to other parts of the agency.

Resources and Occupations.—The resources from which these Indians earn a livelihood consist of farming, cutting cord-wood, river-driving, and the manufacture of Indian wares. Their wares are disposed of to farmers and traders in the vicinity of the reserve. Farming is not engaged in to any great extent; all, however, raise sufficient potatoes to meet their wants.

Health and Sanitation.—Apart from ordinary diseases, such as many Indians are subject to, the health of the band has been fairly good. Some thirty or more of the Indians were vaccinated, owing to their dread of the small-pox epidemic in St. John, and

the possibility of the disease spreading to the reserve. Happily, these and all other Indians in the agency escaped this and all other contagious diseases during the year.

Temperance and Morals.—The morality of these Indians is good, and they are temperate in their habits.

Education.—A few of the children attend the free school of the district, the majority of them, owing to their peculiar habits, will not attend a school where they have to mix with white children.

Religion.—All the members of this band are Roman Catholics. They are regular attendants at a church in the vicinity of the reserve. Their spiritual affairs are carefully attended to by the Rev. Father McDermott.

General Remarks.—The rest of the Indians of this agency are located in small bands in the counties of Queen's, King's, St. John and Charlotte. Their employments consist of milling and the manufacture of Indian wares that are sold to farmers, traders and tourists at fair prices. All the Indians of this agency, with the exception of those who come from the bordering provinces and reside in the villages along the Intercolonial railway, in the county of King's, are of the Amalecite tribe, and I am pleased to state that their mode of living and general habits are yearly improving.

I have, &c.,

JAMES FARRELL,
Indian Agent.

NOVA SCOTIA,
MICMACS OF ANNAPOLIS COUNTY,
ANNAPOLIS, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR, —I have the honour to transmit my annual report and tabular statement for the year ended June 30, 1902.

Reserves.—There are two reserves in Annapolis county: one situated on the Liverpool road, seven miles from Annapolis town, and the other at Cegunmcega lake, on the boundary between Annapolis and Queen's counties. The former has an area of five hundred and seventy-two acres, the latter four hundred acres. No Indians live on the reserves, and they are of no benefit to the Indians of the county. They occupy lands of their own situated at Lequille, Paradise and Middleton.

Vital Statistics.—The population is seventy-three, an increase of two during the year.

Occupations.—The principal occupations are basket-making, hunting, and fishing. Some are employed at mill work, and stream-driving, and some of the younger men work at farming.

Education.—The children attend school at Lequille and Middleton, and the parents are generally anxious that they should. They are making fair progress.

Health and Sanitation.—The health of these Indians has been fairly good; there has been no contagious disease among them. Their dwellings are nearly all frame buildings and are generally neat and clean. They willingly comply with the sanitary regulations.

General Remarks.—The Indians of this agency are temperate, quiet and law-abiding; and with the assistance the government gives them, make a fairly comfortable living.

I have, &c.,

JOHN LACY,
Indian Agent.

NOVA SCOTIA,
MICMACS OF ANTIGONISH AND GUYSBORO' COUNTIES,
HEATHERTON, August 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and tabular statement for the year ended June 30, 1902.

Vital Statistics.—During the past year there has been an increase in the band, making the Micmac population of this agency two hundred and twelve. There have been eleven births and thirteen deaths, but a few families absent from the agency for some time returned recently with increased numbers.

Health.—The general health of the Indians has been but fair. Consumption is becoming very prevalent amongst them.

Buildings.—There have been two new buildings put up and a great deal of repairing done during the past year.

Religion.—All the Indians in this agency are Roman Catholics and are very attentive to their duties.

I have, &c.,

J. R. McDONALD,
Indian Agent.

NOVA SCOTIA,
MICMACS OF COLCHESTER COUNTY,
TRURO, July 11, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statement of agricultural and industrial statistics for the fiscal year ended June 30, 1902.

Reserve.—The Millbrook reserve is situated three miles south of Truro. It contains an area of thirty-five acres.

Population.—The population of this band is one hundred and nine, the same as last year.

Health.—There has not been any disease of an epidemic nature, though there has been some ordinary sickness. The health has averaged fairly good this year.

Occupations.—The principal occupations of the Indians are coopering, rustic work, basket-making, berry-picking and bead-work. The men also work at lumbering and hunting, also acting as guides to hunting and fishing parties.

Education.—The Indians of this reserve have enjoyed the privilege of a school for over three years and are making fair progress.

Characteristics and Progress.—The Indians appear to be gradually bettering their condition. On account of living near the progressive town of Truro, they are able to obtain good wages any time they wish to work.

Some of them are working on the government gravel train, and some of them are working on the town sewers, and are in this way bettering their condition.

One of them, Noel Abram, had the misfortune to lose his barn, containing three head of cattle, by fire, but with the assistance of his white neighbours and the department he was enabled to replace his loss.

Religion.—The Indians of this county are Roman Catholics. They attend church in the town of Truro.

I have, &c.,

THOS. B. SMITH,
Indian Agent.

NOVA SCOTIA,
MICMACS OF CUMBERLAND COUNTY,
PARRSBOROUGH, August 21, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report, together with accompanying agricultural and industrial statistics, for the fiscal year ended June 30, 1902.

Location.—This agency comprises the whole of Cumberland county. The Indians are located chiefly on the Franklin Manor reserve, about fourteen miles from the town of Parrsborough, and about thirty-five miles southwest from the town of Amherst. The reserve contains one thousand acres of good land.

A few Indians reside at Springhill Junction, some at East Southampton, and one family each at Amherst and Oxford.

Vital Statistics.—The combined population of the Indians in this county is ninety-five. This is seven less than last year, the decrease being due to the fact of a number of Indians moving to other counties.

During the year there were nine births and eight deaths.

Health and Sanitation.—During the past year there has been more than an average amount of sickness. Although the sanitary precautions recommended by the department have been, as far as possible, carefully carried out, I am sorry to say that several of these Indians, at this time, are suffering from some form of tuberculosis.

Resources and Occupations.—These Indians are taking more interest in agriculture than ever before, and as a result, their crops are looking remarkably well. In winter the lumbermen in the vicinity give employment, at good wages, to all who are willing to work. Some of the Indians, in preference to farming or lumbering, make baskets, tubs, mast hoops, &c. Some are hunters or guides for hunting parties, and in this way make a fairly good living. In summer and autumn the women and children pick berries for sale.

Education.—There is no school-house on the reserve, but in the immediate vicinity there is a public school to which the department gives an annual grant. A few of the Indian children attend this school and are making progress in their studies. Lack of suitable clothing is largely the excuse given for the non attendance of the remaining children. In a few cases clothing has been furnished these children with gratifying results.

Religion.—All the Indians in this county are Roman Catholics. They have a chapel of their own.

Temperance and Morality.—There is very little drunkenness among the Indians in this county; but I am sorry to say some of them are not as moral in other ways as I could wish. However, the really immoral ones have now all left the reserve.

I have, &c.,

F. A. RAND, M.D.,
Indian Agent.

NOVA SCOTIA,
MICMACS OF DIGBY COUNTY,
BEAR RIVER, September 15, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit my annual report for the year ended June 30, 1902.

Reserve.—The reserve is situated one and a half miles from the village of Bear River, and contains sixteen hundred acres, of which forty-eight are cultivated, two hundred are natural pasture, the remainder is under wood chiefly second growth.

Vital Statistics.—The population is one hundred and twenty-three. Twenty-seven of the number reside in Weymouth, Digby county, twenty-eight miles from the reserve. There has been a decrease of four caused by removal to other reserves. During the year there were four births and eight deaths.

Health and Sanitation.—There has been a good deal of sickness during the year, some of the deaths were from consumption; others from grippe and old age. The sanitary conditions are good. The Indians have been vaccinated as directed by the department.

Resources and Occupations.—They derive their support from farming, coopering, fancy work for tourists, hunting, canoe-building and river-driving.

Buildings.—The buildings on the reserve are frame. Most of them are in good repair and comfortable.

Stock.—The stock consists of two cows and one two-year-old.

Religion.—The Indians of this band are all Roman Catholics. They attend chapel on the reserve.

Education.—The Indians on the reserve have a good school. The attendance is very good. The pupils are quick to learn and are giving good satisfaction. All the Indians on the reserve with few exceptions can read and write.

Characteristics.—Most of these Indians are industrious and law-abiding.

Temperance.—With few exceptions, they are strictly temperate. Measures have been taken not to allow liquor to be sold on the reserve.

I have, &c.,

JAS. H. PURDY,
Indian Agent.

NOVA SCOTIA,
MICMACS OF HALIFAX COUNTY,
SHEET HARBOUR, August 29, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit my annual report and tabular statement for the year ended June 30, 1902.

Location and Population.—This agency includes the Indians residing in the different parts of Halifax county, chiefly at Sheet Harbour, Cole Harbour, Dartmouth, Bedford, Windsor Junction, Wellington and Elmsdale. Altogether there are one hundred and sixty-two Indians residing in this county.

Progress.—There has not been much progress made this year by the Indians of this agency. Those who have settled homes or homes in their own right are perhaps more comfortable than in past years, but those who shift around from place to place make but a precarious livelihood.

Education.—Since the school at Cole Harbour was closed, no special effort has been made at educating the children. Some take advantage of schools for whites, while others live in places where it is impossible, or at least very inconvenient, to send children to school.

Morality.—The Indians of the agency are generally well behaved. There are, however, some instances of bad conduct, drunkenness being the principal offence.

Religion.—The Indians are all members of the Roman Catholic Church.

I have, &c.,

CHAS. E. McMANUS,
Indian Agent

NOVA SCOTIA,
MICMACS OF HANTS COUNTY,
SHUBENACADIE, August 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and tabular statement for the year ended June 30, 1902.

Vital Statistics.—During the year there has been an increase of six in the band under my care, making the number at present ninety-one. There were four births and three Indians joined the band.

Health and Sanitation.—The health of the Indians, with the exception of those who will persist in roving around, has been fairly good, only one adult having died; and could they be kept on the reserve, where they would observe sanitary regulations required by the department and insisted on by Dr. McLean and myself, they would be much more healthy and less exposed to accidents, both to health and limb.

Occupations.—Their principal employment consists in making goods for the sport market, together with abundance of fancy work, such as baskets and bead-work, but this is fast giving way to farming, as each year finds more following agriculture as a means of living.

Education.—The school is the institution in my opinion that will eventually solve the problem of making the Indians what we would wish them to be, and although at times they lack the interest that ought to characterize children who have such an advantage for a good education, still, when we look into the matter, we find that the parents do not encourage the little ones as they ought, for often when I visit them and point out the advantages of having their children educated, and tell them of other places where the children of other bands in Canada are doing so well at school, they acknowledge the institution to be good, but lack the interest that will have the pupil at school every day.

Temperance.—These Indians as a rule are temperate, owing, no doubt, to the fact that it is very hard for an Indian to procure intoxicants here.

Religion.—All are Roman Catholics, and are attentive at their church service, which is conducted by Father Young.

I have, &c.,

ALONZO WALLACE,
Indian Agent.

PROVINCE OF NOVA SCOTIA,
MICMACS OF KING'S COUNTY,
STEAM MILLS, August 9, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and tabular statement for the year ended June 30, 1902.

Population.—There are but three families on this reserve, the rest being scattered throughout the county. They number about seventy-one men, women and children.

These Indians still continue to live quietly on their possessions.

Health.—They are comparatively healthy as a rule, there being but little sickness among them. There are two old persons who are a total charge to the department. The greater number of the others maintain themselves, unless hurt by accident, which happens very often, especially during the lumber season, when they have to be assisted by the department.

Characteristics.—These Indians live quietly and peaceably.

I have, &c.,

C. E. BECKWITH,
Indian Agent.

PROVINCE OF NOVA SCOTIA,
MICMACS OF PICTOU COUNTY,
NEW GLASGOW, July 11, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statistical statement for the year ended June 30, 1902.

Reserves.—There are two reserves in this agency. The Fishers Grant reserve has an area of one hundred and sixty-four acres. The other reserve is a small island near Merigonish, on which the church stands. About thirty-seven Indians live on this island from June till October, when they migrate to the mainland at Pinetree, where they enjoy the convenient and hospitable neighbourhood of the dominant race during the winter months.

Vital Statistics.—The combined population of the two reserves is one hundred and thirty-nine. There were three births and three deaths during the year. A family of four came to Chapel Island from Cape Breton.

Resources and Occupations.—Basket-making, coopering and farming are the avocations in which the Indians are employed. Quite a number during the summer months get employment loading and unloading steamers at Pictou Landing.

Religion.—They are all Roman Catholics and much attached to their faith.

Education.—For the past four years a school has been in operation at Indian cove, Pictou Landing. The children have made excellent progress in that time in reading and arithmetic. These good results are due in great measure to their efficient and energetic teacher, Miss Nellie Connolly. Three pupils attended the manual training school at Pictou and made good use of their opportunities.

Health.—The health of the Indians during the past year has usually been good. The deaths occurring were from tuberculosis, a few are suffering from the same trouble at present. The government's efforts in educating the Indians in hygienic laws, to be observed in cases of consumption will no doubt be beneficial.

Characteristics.—The Indians generally are honest, law-abiding and industrious. There are a few instances of the hereditary weakness of the race for 'fire-water'.

I have, &c.,

J. D. McLEOD,
Indian Agent.

NOVA SCOTIA,
MICMACS OF QUEEN'S AND LUNENBURG COUNTIES,
CALEDONIA CORNER, August 9, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statistical statement for the year ended June 30, 1902.

Reserves.—There are three reserves in this agency, having a combined area of three thousand acres, one at New Germany one at Gold River and the third at Wildcat in Queen's county. There are Indians living on all three of these reserves, who make their

living chiefly by farming. There are others living at Lunenburg, Bridgewater, Milton, Mill Village, Wildcat and Greenfield. Those not living on the reserves live by hunting, fishing, basket-making, working in lumber woods, and as guides to sportsmen.

Vital Statistics.—The population of this band is eighty-six, consisting of eighteen men, sixteen women and fifty-two young people under twenty-one years of age. During the year there were two births and three deaths.

Health.—The health of the Indians of this agency outside of ordinary complaints has been good, there being no contagious disease among them. The deaths have all been those of old Indians.

Education.—There is only one school in this agency, at New Germany. It is in excellent order under the efficient charge of Miss Shea, who is most painstaking.

Religion.—The Indians in this agency are all Roman Catholics.

Characteristics.—The Indians of this agency as a rule are moral and law-abiding.

I have, &c.,

CHARLES HARLOW,
Indian Agent.

NOVA SCOTIA,
MICMACS OF RICHMOND COUNTY,
ST. PETER'S, August 21, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902.

Reserve.—Chapel Island reserve contains twelve hundred acres, of which over one hundred are in a state of good cultivation.

Vital Statistics.—The population is one hundred and twenty-one, a decrease of seventeen since last year; there having been seven deaths and ten Indians having left the reserve.

Health.—There was a good deal of sickness amongst the Indians last year. Except in the case of two infants, all the deaths were from consumption. This dreadful malady is the prevailing disease, and unless its progress is arrested, it promises to exterminate the tribe at some future day. The department did much last year in circulating amongst the Indians literature showing the great danger of contagion and the precautions necessary to arrest its progress; but it is hard to get them to realize the danger. Again their habit of begging from house to house for every kind of food, and using the same whether fit or unfit, cannot but have a most pernicious effect upon their health.

Education.—The school is in constant operation and satisfactory progress is shown.

Religion.—The Indians on the reserve are all Roman Catholics, and are faithful in the practice of their religion.

Characteristics.—The Indians as a rule are morally good and lead a harmless life. They are law-abiding and sober.

I have, &c.,

JOHN FRASER,
Indian Agent.

Nova Scotia,
Micmacs of Shelburne County,
Shelburne, July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report and tabular statement for the year ended June 30, 1902.

Vital Statistics.—During the past year there has been an increase of three in the band, making the Micmac population of this county seventy-nine.

Health and Sanitation.—The health of the Indians with the exception of two families has been good. The sanitary measures recommended by the department have been carefully carried out.

Occupations.—Their principal employments are lumbering, hunting, making mast hoops and baskets, and working on their farms.

Education.—Very few of the children attend school, as they reside quite a distance from the school-houses.

Temperance.—With the exception of one, all are temperate.

Religion.—The Indians in this county are all Roman Catholics.

I have, &c.,

JOHN J. E. DE MOLITOR,
Indian Agent.

Nova Scotia,
Micmacs of Victoria County,
Baddeck, August 25, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report and statistical statement for the fiscal year ended June 30, 1902.

Reserve.—There is only one reserve in this county, situate at Middle River. It contains six hundred and fifty acres, four hundred acres of which is covered with a second growth of light timber. The soil is very fertile, being especially adapted for raising hay.

Tribe.—These Indians are Micmacs.

Vital Statistics.—The population of the Middle River reserve is one hundred and three, comprising twenty-seven men, twenty-one women, and fifty-five young people under twenty-one years; this is an increase of three over last year. The number of births was four, deaths two, and one woman joined the band through marriage.

Health and Sanitation.—The health of the Indians for the past year has been good. The Indians on the reserve were all vaccinated last spring, their dwellings thoroughly cleaned, and all refuse and garbage burned.

Resources and Occupations.—The principal pursuits are farming, coopering, basket-making, hunting, fishing, and hiring out as labourers. A large number of the young men are employed as labourers during the summer months.

Education.—There is only one school on the reserve. A new school-house is in process of erection, and will be ready for occupation about September 1. The school attendance during the past year was fair.

Religion.—The Indians are Roman Catholics, and are very strict in the observance of their religious duties. There is no church on the reserve.

Characteristics and Progress.—The Indians are an industrious and law abiding class of people. Of recent years they seem to be materially improving in their manner of living. A large number of them live in neat, comfortable dwelling-houses, and are becoming much interested in farming.

Temperance and Morality.—I am happy to report that they are strictly temperate, with the exception of some of the members of one family.

So far as I know, they are moral in their habits.

I have, &c.,

A. J. MACDONALD,
Indian Agent.

NOVA SCOTIA,
MICMACS OF YARMOUTH COUNTY,
YARMOUTH, October 3, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and tabular statement for the year ended June 30, 1902.

Reserve.—The reserve is situated on the north side of Starr's road, about four miles from the town of Yarmouth. There are only four families living on it at present, the rest are scattered all over the country, some at Salmon river, Tusket, Tusket Forks, Pubnico and Hectanooga.

Population.—The population of this agency is eighty-three.

Health and Sanitation.—The health of the Indians has been poor during the past year. They observe sanitary regulations about their dwellings fairly well.

Occupations.—These Indians engage mostly in making baskets, hoops, axe-handles, in fishing, hunting and acting as guides and in berry-picking, while some work in saw-mills, and others do general work.

Education.—The children on the reserve have a poor chance of schooling, but in Tusket and Pubnico they attend school regularly.

Religion.—The Indians in this agency are all Roman Catholics.

General Remarks.—With few exceptions, these Indians are temperate and law-abiding, but practise very little economy.

I have, &c.,

W. H. WHALEN,
Indian Agent.

PRINCE EDWARD ISLAND,
MICMACS OF PRINCE EDWARD ISLAND,
HIGGINS ROAD, August 4, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report and statistical statement for the fiscal year ended June 30, 1902.

Reserves.—There are two reserves in this superintendency, viz.: Lennox Island reserve and the Morell reserve. The former is an island in the Richmond bay; it contains one thousand three hundred and twenty acres. The Morell reserve is situated on lot 39 in King's county; it contains two hundred and four acres of good land.

Population.—There are in this superintendency, comprising both reserves and other localities in Prince Edward Island, three hundred and sixteen souls, an increase of one since the last census. There were eleven births and ten deaths during the year.

Health.—During the past year there has been a great deal of sickness, but at the present time, with the exception of four or five, the health of the Indians is good.

Occupations.—The principal occupations of the Indians on the reserves are farming, basket-making and fishing. One of them, Francis Thomas by name, has one hundred lobster traps, and sold lobsters to the extent of over $150 this season. They fish also for cod and eel in summer, and smelt during the winter. It is a pretty sight to see all their little buildings on the ice during the winter months. They sell the smelts to buyers who ship them to the States. They get a fair price for them, and make a considerable amount of money.

Buildings, Stock, and Farming Implements.—The Indians who reside on the reserves live in frame houses, some of them well finished outside and whitewashed with lime, but those scattered off the reserves live in camps or shanties which afford very little comfort. Those residing on the reserves keep horses, cows, pigs, sheep and poultry. They are well provided with farming implements, such as ploughs, spring-tooth harrows, &c.

Education.—There is but one school situated on Lennox Island, and attended by twenty-four children.

Religion.—These Indians are all Roman Catholics. They have a church on Lenuox Island reserve, built four or five years ago, which is a credit to them.

Temperance.—On this subject I am happy to be able to report that, with the exception of a few, the Indians residing on the reserves are sober. They organized a temperance society some years ago on Lennox Island; and it has done a great deal of good on this reserve.

I am sorry to have to report that last summer the lumber and fire-wood of over one hundred and fifty acres of land was destroyed by bush fire. This will render the fuel scarce in years to come.

I have, &c.,

JOHN O. ARSENAULT,
Indian Superintendent.

MANITOBA SUPERINTENDENCY,
BERENS RIVER AGENCY,
WINNIPEG, September 13, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to present a report reviewing the work of the department in the Berens River agency, in Treaty No. 5, for the year ended June 30, 1902.

Agency Limits.—The limits of the agency reach from Black river, fifty miles from the outlet of Red river, on the eastern shore of Lake Winnipeg, to Cross lake, in the valley of the Nelson river, a distance from south to north of about four hundred miles. The agency also embraces Fisher river on the west side of Lake Winnipeg, and runs northeastward nearly three hundred miles to Pekangekum lake. Travel over such a large territory involves many long romantic and not infrequently perilous journeys both in summer and winter.

Reserves.—Twelve reserves are included in this agency. Counting from the south, they are as follows:—Black River, Hollow-water River, Loon Straits, Bloodvein River, Fisher River, Jackhead River, Berens River, Little Grand Rapids, Pekangekum, Poplar River, Norway House and Cross Lake.

Loon straits, lying between Hollow-water and Bloodvein river, is not at present occupied as an Indian reserve, but ownership is still vigorously maintained by the Island band, once numerous but unhappily decreasing year by year. The area of the several reserves named is in round numbers fifty-eight thousand acres, of which about one thousand five hundred are under cultivation, three thousand are used as pasture-lands, five thousand as hay limits, and the rest is divided into forest, rock and swamp, with arable patches here and there as yet unreclaimed.

Tribe and Population.—The population is divided nationally into two tribes,—the Swampy Crees and the Saulteaux. The former is an offshoot of the great Cree tribe of the western plains, and their language is similar, though there are many dialectic differences. The latter is closely related to the Ojibbewas of Ontario, whom they much resemble in speech and in manners. The number who received treaty this year was two thousand two hundred and twenty-two, being a decrease of six as compared with last year; but as there were a good many absentees at treaty time, the apparent falling off is of no significance; indeed there is a slight numerical advance.

Outside of the number quoted are a very great many who from time to time are crowding in from the regions beyond and are building, fishing and hunting adjacent to the reserves, are mingling and intermarrying with our people, and are not infrequently sources of irritation and disturbance. The majority of these are asking for admission to treaty, but have so far found no open door.

There is also an ever-increasing number of white men and men of mixed blood who have taken wives from the families of treaty Indians and are subsisting on the resources whence the wards of the government obtain their food supplies. This gives rise to questions as to rights and boundaries which require increasing attention from the department.

Property, Stock, &c.—The amount of personal property owned by our Indians is about $55,000. The earnings, so far as we have been able to compute them, amount to $60,000, obtained from labour in the mills, on the steamers, and from the sale of fish and fur. The value of the land held by these people is about $30,000. Their implements are worth $2,000. The improvements noted this year are estimated at $9,000. There are, all told, nearly five hundred head of cattle in the agency, notwithstanding a

decimating epidemic which prevailed last winter on several of the reserves where special effort is thrown into this industry. These figures are given to show the condition of their temporal affairs. All who will work may and do have abundance. Want is almost an unknown quantity except where sickness or misfortune lays the bread-winners aside.

Relief Supplies.—To meet any special cases of destitution, supplies have been put down on all reserves and instructions have been given to the chiefs to see that these are judiciously and impartially given out at such seasons of the year or in such extreme times of misfortune as shall make these gifts of the department most serviceable to their people. This thoughtful interest in the well-being of the Indians is not only wise and commendable, but it is much appreciated by the happy recipients.

Education and Religion.—A goodly number of devoted missionaries of various denominations minister to the educational and spiritual wants of the agency. According to numbers they are classed as follows: Roman Catholics, one hundred and fifty, Anglicans, one hundred and fifty; pagans, two hundred; Methodists, one thousand five hundred and fifty. The teachers in some of the schools deserve great credit, and their scholars evidence considerable improvement. The boarding school at Norway House is a well appointed institution of its kind, and is doing excellent work. Berens River and Cross Lake are voicing earnest desire for more schools of this class. Several reserves are mourning the loss of day school privileges. On investigation, I find that missionary authorities have found it increasingly difficult to obtain volunteers for a field so distant from the advantages of civilization, especially as the demand for teachers in Manitoba and the west exceeds the supply, and the wages paid at home are greater than the department has been accustomed to pay.

Health and Sanitation.—There has been a good deal of broken health within the bounds of the agency during the year. Small-pox overran the southern part, happily with no very disastrous results. Measles afflicted the Berens River people through successive months of last winter. Slower, but more serious, diseases have blighted the happiness of other reserves. The northward march of commerce bringing so much advantage in many ways has unfortunately left its baneful effects as well. Medical assistance sent out by the department has been duly appreciated by those who have been directly benefited, though the field is wide and the visits necessarily few and short.

The dispensaries have been well supplied with medicines and the dispensers have cheerfully done what was in their power to help the sick within reach. Many earnest appeals from forest solitudes have been disregarded not from want of heart, but from lack of power to reach and help at the proper time. A calamity fell upon the people of Norway House on August 8, when three women lost their lives in an electric storm. I am happy to add that at the time of writing general good health prevails throughout the agency.

Temperance and Morality.—I think that on the whole our Indians are law-abiding, temperate and moral. There have been cases during the year where heroic treatment was called for, cases where perfidy was in evidence and where a disposition to defy law merited sharp reproof; but there has been an entire absence of the grosser crimes which have darkened the social life of other places nearer to the light of a fuller knowledge. No liquor cases have been brought to my notice. All the traders have kept well within the limits of their privileges, and I have travelled without fear of danger and without apparent defence in a country where humanly-speaking protection was conspicuous only by its absence.

Medals.—Commemoration medals were distributed to all chiefs and councillors by direction of the Indian Commissioner, and were received with deep appreciation and national pride. On every hand the rulings of the department in cases affecting the interest of Indians were received with respectful acquiescence. The flag of our country was honoured by frequent and enthusiastic salutes. In every council were heard expressions of loyal devotion to the 'Great Father' our beloved King Edward.

I have, &c.,

JOHN SEMMENS,
Indian Agent.

MANITOBA SUPERINTENDENCY,
RAINY RIVER DISTRICT,
COUCHICHING AGENCY,
FORT FRANCES, ONT., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for this agency for the year ended June 30, 1902.

Agency.—The agency buildings are situated at the mouth of Rainy lake, on what is known as Pither's point, about three miles east of Fort Frances, and the agency comprises the following bands, viz.: Hungry Hall, Nos. 1 and 2, Long Sault, Nos. 1 and 2, Manitou Rapids, Nos. 1 and 2, Little Forks, Couchiching, Stangecoming, Niacatchewenin, Nickickonsemenecanning, Seine River, Lac la Croix and Sturgeon Lake, being in all, fourteen.

HUNGRY HALL BANDS NOS. 1 AND 2.

Reserves.—These reserves, Nos. 14 and 15, are situated near the mouth of the Rainy river, and contain six thousand two hundred and eighty acres. The timber on reserve 15 is of poor quality, as fires have frequently run through it during past years and destroyed most of the merchantable timber, but on reserve 14 there have never been any fires and there are large quantities of tamarack, spruce and cedar.

Tribe.—All the Indians in this agency belong to the Ojibbewa tribe.

Vital Statistics.—The population of the two bands at the last annuity payments was fifty-three, consisting of fifteen men, twenty women, nine boys and nine girls. During the year there were two births and seven deaths in these two bands.

Health and Sanitation.—The general health has been fairly good, there being no epidemical diseases among them. All the Indians have been vaccinated.

Resources and Occupations.—The majority work at the saw-mill and in the lumber camps. No timber has been taken out by them from their reserves during the past year.

Religion.—Most of the Indians are pagans, a few belong to the Church of England.

Education.—There is no school in operation on these reserves.

Temperance.—Most of the Indians are addicted to the use of intoxicants, which they get principally on the American side.

LONG SAULT BANDS NOS. 1 AND 2.

Reserves.—These reserves, Nos. 12 and 13, are situated on the north bank of Rainy river, opposite the rapids of that name. Their combined area is eleven thousand four hundred and thirteen acres.

Vital Statistics.—There were on these reserves at the last annuity payments, twenty-one men, thirty women, twelve boys and nineteen girls, making a total of eighty-two. During the year there were two births and six deaths.

Resources and Occupations.—These reserves are well adapted for farming and stock-raising. The land is a rich black loam, with a clay bottom. A great deal of the timber has been destroyed by frequent bush fires in past years. During the past winter the Indians were employed in taking out cord-wood, ties and fence posts from the dead

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Indians breaking new land, White Bear's Reserve, Moose Mountain Agency, East Assa.

and fallen timber on their reserves. They also made a good deal of money from stur. geon-fishing last spring.

Education.—There is a very good day school here under the auspices of the Church of England, which is taught by Miss Annie Miller, an excellent teacher, who takes great interest in her work. The atttendance has been very good during the past year.

Religion.—The Church of England has a very good church here with a resident missionary, Rev. J. Johnstone, who looks after the religious welfare of all the bands on Rainy river.

Temperance.—These Indians are, I regret to state, intemperate, and, owing to their close proximity to the American boundary, can frequently get all the liquor they want.

Manitou Rapids Bands Nos. 1 and 2.

Reserve.—These bands occupy reserve No. 11, which is situated on the north bank of the Rainy river, opposite the rapids of that name. The area is five thousand seven hundred and thirty-six acres.

The land is a rich clay loam and there is a considerable quantity of merchantable timber, such as pine, spruce, tamarack and cedar, although frequent fires in the past have destroyed a large portion of it.

Vital Statistics.—The population at the last payments consisted of twenty-six men, twenty-nine women, thirty boys and twenty-three girls, making a total of one hundred and eight. During the year there were five births and four deaths.

Resources and Occupations.—These Indians are all good axemen and can always get employment in lumber camps at good wages. They also make a good deal of money at sturgeon-fishing in the spring.

Education.—There is a day school on this reserve, under the auspices of the Church of England.

Temperance.—These Indians are very much addicted to the use of intoxicants.

Little Forks Band.

Reserve.—The reserve of this band is situated on the north bank of the Rainy river, twelve miles east of Fort Frances and opposite the mouth of the Little Forks river, and is designated as No. 10. It contains an area of one thousand nine hundred and twenty acres.

Vital Statistics.—There were twelve men, sixteen women, nine boys and ten girls, forty-seven in all, at the last annuity payments. During the year there was one birth and one death.

Resources and Occupations.—Some of these Indians took out ties and saw-logs from the dead timber on their reserve last winter. A number made a very good living by hunting last winter.

Education.—There is a good day school on this reserve, under the control of the Church of England, but there are only five children of school age in the band.

Temperance.—This band is fairly temperate.

Wild Land Reserve, No. 15M.

Reserve.—This reserve, consisting of twenty thousand six hundred and seventy-one acres, is owned in common by all the above mentioned Rainy river bands. It adjoins the Hungry Hall reserves near the mouth of the Rainy river.

This reserve is well timbered with pine, spruce, tamarack, cedar and poplar. The land is a rich clay loam.

Couchiching Band.

Reserves.—The reserves of this band are situated on Rainy lake and Stangecoming bay, three miles north of Fort Frances, and are designated as 16A, 16D and 18B.

They contain an area of fifteen thousand nine hundred and forty-seven acres. There is considerable good land, but the greater portion is rocky and broken. There is very little merchantable timber on these reserves owing to frequent fires in the past destroying the best of the timber.

Vital Statistics.—Thirty-one men, forty-three women, thirty-five boys and twenty-five girls constituted the population at the last annuity payment, making a total of one hundred and thirty-four. During the year there were three births and six deaths.

Health and Sanitation.—The general health of this and all the other bands in this agency has been good. During the winter, when small-pox was prevalent throughout the country, there was only one case in this agency, which was in this band, but it was a mild form, and a close quarantine was kept and no new cases occurred.

Resources and Occupations.—The resources of the band are many, but they principally consist of working in lumber camps, cutting cord-wood, fishing and hunting.

These Indians sold a large quantity of cord-wood cut from the dead and fallen timber on their reserve during the past winter.

Buildings.—The houses are well built and very comfortably furnished and all are kept very clean and neat.

Education.—There is a good day school here and well furnished. The attendance has been fairly regular and progress fair. It is under the auspices of the Roman Catholic Church.

Religion.—The majority of the band are Roman Catholics. They have built a very fine church. The Rev. Father Allard has charge of this mission.

Progress.—These Indians are principally French half-breeds, and are an industrious and law-abiding people.

Temperance and Morality.—On the whole, this band is a temperate and moral community.

Stangecoming Band.

Reserve.—This reserve, No. 18C, is situated about eight miles north of Fort Frances, on Rainy lake, and contains three thousand eight hundred and sixty-one acres. The greater portion is barren rock, and the timber is of poor quality.

Vital Statistics.—The population at the last payments consisted of fifty-two persons, there being eight men, nine women, twelve boys and twenty-three girls. During the year there was one birth and three deaths.

Resources and Occupations.—These Indians live principally by fishing, hunting and working in the lumber camps.

Education.—There is a day school here under the control of the Roman Catholic Church. The attendance and progress during the year has been very good.

Religion.—These Indians are pagans.

Temperance and Morality.—They are a fairly temperate and moral people.

Niacatchewenin Band.

Reserves.—The reserves attached to this band are 17A and 17B, and are situated about twenty-six miles northwest of Fort Frances, on Northwest bay of Rainy lake.

The area of these reserves is six thousand two hundred and one acres. There is considerable arable land, but the greater portion is rocky and broken.

Vital Statistics.—There were ten men, thirteen women, fourteen boys and seventeen girls at the last annuity payments, making a total of fifty-four. During the year there were three births and no deaths

Resources and Occupations.—The able-bodied men of this band are employed in lumber camps, but they principally make their living by hunting and fishing.

Religion and Education.—All the members of this band are pagans. There is no school on the reserves.

Nickickonsemenecanning Band.

Reserves.—This band owns reserve 26A on Red Gut bay, reserve 26B on Porter inlet, and reserve 26C on Sandy Island river, Rainy lake. The combined area is ten thousand two hundred and twenty-seven acres, a considerable portion of which is heavily timbered.

Vital Statistics.—At the last payments the population of this band consisted of eleven men, sixteen women, seventeen boys and twelve girls, making a total of fifty-six. During the year there were four births and ten deaths.

Resources and Occupations.—The majority of this band do nothing but hunt and fish; some of the young men work in lumber camps.

Riviere la Seine Band.

Reserves.—This band has two reserves: No 23A extends from Wild Potato lake to Sturgeon falls on the Seine river; No. 23B is at the mouth of the Seine river. They contain a combined area of eleven thousand and sixty-three acres.

Vital Statistics.—The population consisted at the last annuity payment of thirty men, thirty-five women, thirty-four boys and thirty-nine girls, making a total of one hundred and thirty-eight. During the year there were four births and six deaths.

Resources and Occupations.—Only a few of these Indians reside on their reserves. They live principally by fishing and hunting.

Lac la Croix Band.

Reserve.—The reserve, No. 25D, belonging to this band is situated on Lac la Croix, near the boundary, and contains fifteen thousand three hundred and fifty-three acres.

Vital Statistics.—There were nineteen men, thirty women, twenty-four boys and thirty-six girls, making a total of one hundred and nine persons, at the last annuity payments. During the year there were two births and one death.

Resources and Occupations.—The principal resources of these Indians are trapping, hunting and fishing.

Kawawiagamok or Sturgeon Lake Band.

Reserve.—The reserve allotted to this band is situated on Kawawiagamok lake, and contains an area of five thousand nine hundred and forty-eight acres, the greater portion of which is heavily wooded with spruce, pine and tamarack.

Vital Statistics.—The population at the last treaty payments consisted of eight men, nine women, ten boys and four girls, making a total of thirty-one. During the year there was one birth and no deaths.

Resources and Occupations.—These Indians depend entirely upon their hunting and fishing for subsistence.

General Remarks.

Characteristics and Progress.—The Indians in this agency can be said to be self-supporting, as they get no assistance other than a small supply for the old and infirm, outside of the treaty stipulations. They live principally by fishing, hunting, taking out

cord-wood, railway ties, working in lumber camps, and on steamboats, and make a very comfortable living. On the majority of the reserves very little progress is perceptible; they take very little interest in farming and stock-raising, as it would interfere with their nomadic habits. Their principal drawback is intemperance, which is very difficult to contend with owing to their close proximity to the United States, but every effort is being made to suppress this evil.

I have, &c.,

JOHN P. WRIGHT,
Indian Agent.

MANITOBA SUPERINTENDENCY,
PAS AGENCY,
THE PAS, SASK., July 26, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report of the Pas agency for the fiscal year ended June 30, 1902.

This agency comprises seven reserves, which are scattered over that piece of country that lies between the eastern boundary of the Pas mountain and the western end of Lake Winnipeg. The Indians of this agency are not confined to their reserves, but range all over in quest of a living, the district being very different from most localities where Indian reserves are situated: there is practically speaking no farming land nor any settled community within hundreds of miles. Looking north, east and south from the summit of the Pas mountain, it is one vast level plain without an elevation or obstruction as far as the eye can see. It is drained by numerous creeks and rivulets running into the Great Saskatchewan river, which empties into Lake Winnipeg. The surface is covered with lakes, hay swamps, muskegs, willow and poplar brush, and occasionally good-sized bluffs of spruce and poplar trees.

All the lakes and streams are stocked with different kinds of fish, and in the summer-time numerous varieties of water-fowl from the swan to the snipe make this their breeding-ground. Large and small game are fairly numerous, and all the fur-bearing animals of the country are to be found in this district.

Although the Indians of this agency can make a living—such as it is—and are to a certain extent self-supporting, they have the disadvantage of not being in a position to better their condition or to acquire the knowledge necessary to take their place in a settled community. They only live four or five months out of the year on their reserves, their whole time being taken up in hunting and fishing, no other employment at which they could earn wages being available, and when seasons of scarcity in game and fur-bearing animals occur, as they do periodically, the Indians have a hard struggle for existence. There is this advantage in their present isolated condition: they have no temptations in the way of intemperance or other incitements to make trouble or commit crime, and they are, therefore, comparatively speaking, contented.

The situation and characteristics of each separate band are as follows:—

RED EARTH BAND.

Reserve.—At the base of the Pas mountain on the banks of the Carrot river is the Red Earth reserve, which is the western boundary of the agency. It contains four thousand seven hundred and sixty-nine acres, a portion of which runs well up into the mountain.

Tribe and Population.—The majority of this band belong to the tribe of Plain Crees; the others are of Swampy origin. The population is increasing slowly and consists of twenty-nine men, twenty-eight women, thirty-three boys and thirty-one girls, in all, one hundred and twenty-one.

Education and Religion.—Educating the young on this reserve has not so far been a success, partly owing to the majority of the band still adhering to their pagan superstitions, and partly because, owing to its lonesome and isolated position, it is hard to get a suitable man to remain any length of time as school teacher amongst them. Mr. Thos. Bear, a graduate of Emmanuel College, Prince Albert, who has proved himself to be a successful Indian teacher, has consented to take charge this year, and an improvement may be expected. Those of the band who have joined the Christian religion belong to the English Church and are steadily on the increase. The pagan Indians have given up their conjuring practices, and when the old leaders amongst them die off, the young people will all get into the ways of the church-goers.

Shoal Lake Band.

Reserve.—Ten miles east from Red Earth, and adjoining the Pas mountain, is Shoal Lake reserve, which contains two thousand two hundred and forty acres, a large portion of which lies around the lake and is good hay-land, the remainder is covered with salt springs and spruce timber.

Tribe and Population.—This is a small community and originally an offshoot from the Pas band. They are all Swampy Crees and number about sixty souls.

Education and Religion.—All the children of school age belonging to this band attend school regularly. The yearly average is about fifteen. The present teacher is a native of the district (Louis Cochrane). He was educated at Emmanuel College, Prince Albert, and is doing good work. All the members of this band belong to the English Church.

Cumberland Band.

Reserve.—About fifty miles north from shoal lake and between the shores of Pine Island lake and the banks of the Saskatchewan river is Cumberland reserve, the extent of which is four thousand and twenty-five acres.

Tribe and Population.—These Indians are all Swampy Crees and have now increased to thirty-one men, forty-three women, forty-two boys and forty girls, making a population of one hundred and fifty-six.

Education and Religion.—For a number of years there was no school on this reserve, owing to the non-attendance of children. Last July it was re-opened with a native teacher in charge. The attendance has been better than was expected, but, owing to none of the children ever having been at school before, the progress has been slow, but their willingness to attend school regularly is a good omen, and if the teacher turns out to be competent for the work, there should be a good school here.

There are a few Roman Catholics in this band; the rest belong to the Church of England.

The Pas Band.

Reserve.—About eighty miles east from Cumberland on the banks of the Saskatchewan river is the Pas reserve. It takes in eight thousand one hundred and twenty-eight acres, part of which is on the south side of the river and part on the north, besides several islands and headlands on the neighbouring lakes. The agency office and buildings are located here on the south side.

Tribe and Population.—There are a few of the Saulteaux tribe here; the rest are all Swampy Crees. The population is slowly increasing: there are now eighty-nine men, one hundred and seven women, one hundred and twelve boys and one hundred and ten girls, our hundred and eighteen in all.

Buildings.—Twelve new houses were finished last year, and fifteen are now under construction. They are not very pretentious buildings owing to the heavy expense of getting lumber and shingles, but they are an improvement on the old ones. The Indians completed a new school-house on the north side last year, and have now commenced to build a teacher's residence.

Stock.—Owing to high water prevailing here for a number of years, and both hay and pasture-land being under water, it has been a serious question how or where to get feed for the cattle, of which there is about one hundred head; but so far I am pleased to be able to report that there have been no losses for the want of feed.

Education and Religion.—There are two day schools on this reserve, one on the north side of the river, and one on the south side. Unfortunately we were disappointed in getting a teacher for the north side last year, and consequently that school was closed. A teacher has now been secured and the school is about to be re-opened. The school on the south side has made rapid progress since Miss Hines took hold of it last August, and it is much to be regretted that her services cannot be retained any longer.

The most of this band belong to the Church of England. There are a few Roman Catholics and about twenty Plymouth Brethren.

Moose Lake Band.

Reserve.—About sixty miles northeast from the Pas is the Moose Lake reserve, partly on the mainland adjoining Moose lake and partly on an island about five miles from the shore. Altogether there is an area of six thousand three hundred and forty-two acres.

Tribe and Population.—This band is composed entirely of Swampy Crees, who have now increased to the number of one hundred and twenty-six.

Education and Religion.—Owing to the fact that a number of families that have children of school age live on the island, and on account of the wandering ways of the whole band, it is difficult to get a fair attendance at this school.

Paganism has disappeared at this place and all are now adhering to the Church of England.

Chemawawin Band.

Reserve.—About forty miles southeast from Moose lake, where the Saskatchewan river enters into Cedar lake, is the Chemawawin reserve. It is partly situated on the river and lake and partly on the surrounding islands, and altogether has an area of three thousand and forty acres.

Tribe and Population.—These Indians are originally from the Moose Lake band and belong to the same tribe. They also are slightly on the increase, with one hundred and fifty-six of a population.

Education and Religion.—Since Mr. Hooker took charge of this school it has been steadily improving; he is able to maintain a good average throughout the year, and the progress made by the pupils is most satisfactory. All the Indians of this band have become members of the Church of England, except one, who still clings to his paganism.

Grand Rapids Band.

Reserve.—Where the Great Saskatchewan river enters Lake Winnipeg, and situated on the south side, is the Grand Rapids reserve and the eastern terminus of the agency. There are four thousand six hundred and forty-six acres in this reserve, a large portion of which is hay swamps.

Tribe and Population.—These Indians are all of the Swampy Cree tribe and are on the decrease. There are twenty-one men, twenty-six women, thirty-five boys and

twenty-six girls, making a total population of one hundred and eight as against one hundred and seventeen seven years ago.

Buildings.—The houses here are much better than on any of the other reserves, and are fairly well furnished. This is owing to the Indians being able to get employment, and earn wages at the fisheries which are carried on extensively on the lake.

Education and Religion.—For the last two years the school here has been carried on by Mr. James Isbister, and by his energetic and exemplary influence he has been most successful in his work. He also conducts the services in the English church, of which denomination all the members of the band are adherents.

I have, &c.,

JOSEPH COURTNEY,
Indian Agent.

PROVINCE OF MANITOBA,
PORTAGE LA PRAIRIE AND MANITOWAPAH AGENCIES,
PORTAGE LA PRAIRIE, September 4, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following annual report of my agencies for the year ended June 30, 1902.

PORTAGE LA PRAIRIE AGENCY.

Treaty No. 1.

Reserves.—There are five reserves in this agency.

Roseau River reserve, situated at the confluence of the Red and Roseau rivers, has an area of thirteen thousand three hundred and fifty acres. It is well adapted for farming and stock-raising, as there is plenty of hay, and the soil is a rich black loam. The reserve is level prairie and along the streams there is sufficient wood for fuel and timber large enough for small buildings.

Roseau River Rapids reserve, situated on the Roseau river, about eighteen miles from the mouth, has an area of eight hundred acres, and is well adapted for grain-growing. It has a high elevation, and is in the midst of a district settled by a high class of farmers who set the Indians a splendid example.

Long Plain reserve is situated about fifteen miles southwest of Portage la Prairie, on the north side of the Assiniboine river, in township 10, range 8, west of the 1st meridian. It has an area of ten thousand eight hundred and sixteen acres, is well wooded, and there is some good farming land, but taken generally it is too sandy for farming.

Swan Lake reserve is situated on the north side of Swan lake, in township 5, range 11, west of the 1st meridian, and contains nine thousand six hundred and thirty-four acres. It is well adapted for grain and stock-raising, as there is plenty of hay and water, and it is surrounded by a good wheat-producing country, although slightly inclined to summer frosts.

Indian Gardens reserve is situated near the south bank of the Assiniboine river. It comprises section 11, in township 9, range 9, west of the 1st meridian, and contains six hundred and forty acres. It is all first-quality arable land without any wood of any kind, and very little hay.

Tribe.—The Indians in this agency are all of the Ojibbewa tribe, with more or less strain of white man's blood.

Vital Statistics.—The population of the different bands present at the last annuity payments is as follows: Roseau, including the Rapids, two hundred and nine; Swan Lake, including Indian Gardens, ninety-seven; Long Plain, one hundrerd and ten; making a grand total of four hundred and sixteen.

Health and Sanitation.—The health of the Indians this year has been fairly good, no epidemics have prevailed, and although small-pox broke out in various districts, by thorough vaccination and timely and strict warning, we were able to prevent it from getting amongst the Indians. An attack of scarlet fever in the Roseau Rapids band is accountable for the deaths of several children there. The inspector visited the reserve at the time and made every arrangement possible for their medical care and attention.

Scrofula and consumption in their different phases are accountable no doubt for many deaths, but on some reserves they demonstrate themselves much more than others, doubtless through intermarriage of diseased people.

The usual sanitary precautions have been taken on all the reserves, such as white-washing, cleaning up and burning refuse. Many of the Indians move into tents in the spring, and from observation I believe they have better health there during the summer season, and undoubtedly their surroundings are better from a sanitary point of view, as the wind fulfils the duty of sweeper with much more satisfaction to the Indians than if they had to do it themselves.

Resources and Occupations.—On the Roseau Rapids reserve, grain-farming is followed principally, but the Indians have a small herd of cattle that could be increased had they a plentiful supply of hay. These Indians are good hunters, and make considerable at hunting during the winter season. On the Roseau River reserve grain-farming and cattle-raising are both carried on with some success, but the hard, steady work necessary to keep the land free from weeds and prepare it for the next year's crop is so contrary to the Indian nature that it makes grain-farming a distasteful occupation, and consequently not so successful as one would like to see it.

At Indian Gardens, grain-raising only is carried on, as there is but very little hay on the reserve. At Swan Lake reserve, both stock-raising and grain-farming are followed with considerable success, and the future prospects there look much better this year than in the past. The Long Plain reserve Indians put in a fair crop this spring, and at present the prospects are that it will give a good return.

Many of the best workers on all these reserves can get such steady work at good wages with the settlers that it is difficult to keep them on their reserves long enough to look after their own little farms in a proper manner. And in many ways they appear to be happier, more healthy and contented when working for others and receiving their wages weekly, that they can spend as they like and not have a lot of their lazy relations hanging around to help them eat it up, as is the case when living on the reserve.

There are wanderers in all the bands, who abhor the idea of steady manual labour, and prefer to make a living by digging senega-root, picking berries in season, hunting, fishing, tanning hides, selling bead-work and taking odd jobs at cutting cord-wood, logs and rails, clearing brush-land and doing similar work that will not be under the direct charge of a taskmaster.

Buildings, Stock and Farming Implements.—All the houses and stables are of logs. There are a few good ones, but the hut predominates. Scarcity of good building logs is the greatest impediment in this respect, and the cost of a frame house is beyond the Indians' capacity as yet. Some houses have shingle roofs, and nearly all have lumber floors. The type of house being built at present is always an improvement on the one that it replaces, and until an Indian can afford to buy furniture and appreciate its use, it is a doubtful improvement to build large houses.

The Indians prefer their tents in the summer to their poorly lighted houses, and, being predisposed to consumption, I think the fresh air and sunlight benefit their health.

At Swan Lake and Roseau reserves the cattle are increasing and doing fairly well and the prospects are favourable. At Long Plain there are only a few head of cattle and the Indians do not appear to take any interest in them whatever.

The supply of implements and tools is adequate for their requirements, but it is a difficult matter to get them to take proper care of those supplied by the department. However, many of them have arrived at the conclusion that the government cannot be expected to supply these articles for ever, and are now purchasing for themselves; of these they take much better care and are very particular whom they lend to.

Education.—The Swan Lake day school is the only one in the agency, and during the past year the results have been most encouraging. The teacher, Mr. Kemper Garrioch, is a native of the country, speaking the Indian language. He appears to have got the confidence of the Indians and has worked a great change in their disposition towards civilization. Some of the young men of the band have attended a night school conducted by Mr. Garrioch, and taken altogether, the educational prospects are much ahead of last year.

Religion.—The Roseau River reserve is visited periodically by the priest in charge, under the auspices of the Roman Catholic Church. The spiritual welfare of the Swan Lake Indians is attended to by the teacher there, under the auspices of the Presbyterian Church. The Indians of the Roseau Rapids, Indian Gardens, and Long Plain, are still upholders of the old forms of pagan worship, and none of the religious denominations appear to consider them worthy of a missionary's efforts.

Characteristics and Progress.—One of the greatest characteristics in an Indian, to me, is the time he will spend, the distance he will travel, and the hardships he will undergo, in his efforts to get something for nothing. He will ride or drive any distance and talk for hours for a trifle not worth considering, but, should he be successful in his efforts he is perfectly satisfied so long as he did not have to work for it, as in his estimation his time or trouble count for nothing. Another impediment to progress is their seeming inability to manage their own affairs beyond sufficient for the day, as just as soon as an Indian living on a reserve acquires a little money over and above his present needs, he just itches all over to give a dance and feast to show the other fellows in the band what a big-hearted chap he is, and probably impress the other sex with his personal attractions. Then, after his money is gone, he will come to the agent and ask how is he going to make a living. While they are off the reserve working for settlers, we hear very much less of this.

Temperance and Morality.—On account of the reserves being in proximity to railroad towns, there is considerable intemperance, and where there is liquor amongst Indians there is always immorality, and it is just as difficult to control, if not more so, as it is amongst the whites. Visiting Indians from across the line and half-breeds not in treaty appear to convey the liquor to the Indians, but it is nearly impossible to to get any proof. There are many half-breeds in treaty who, being well dressed and speaking good English, can obtain liquor from almost any liquor-dealer without suspicion. Cider is accountable for much of the drunkenness, but it is very difficult to get a conviction, as, although we can prove the sale to the Indian, it seems impossible to prove whether he drank hard or sweet cider, and the sale of the latter is legal.

General Remarks.—Although last winter was fairly severe at times, very little hardship was experienced amongst the Indians. They made a fairly good hunt for fur, and with the sale of a little wood and hay, and some assistances in food from the department for the old and sickly, there was no particular case of want.

Portage la Prairie Sioux.—This band, although within the jurisdiction of this agency, is not in treaty. These Indians own and live on a tract of land, about twenty-six acres, purchased by themselves within the town limits. They also have lot No. 14 of the parish of Portage la Prairie, given to them by the Dominion government, but to date they have not made any use of it. Physically they are a fine class of Indians, big, strong, and healthy-looking. They have usually good houses and gardens, but last spring through the Assiniboine river overflowing its banks, their reserve was flooded, and many of their houses were destroyed and gardens spoiled for the time being.

However, when the river subsided, they went to work again, and their gardens are now a credit to them, and they are rebuilding their houses.

They can always get all the work they want with the farmers in the vicinity, make a good living, and are independent and self-supporting; but they will get possession of liquor occasionally, which causes considerable trouble. Taken altogether as Indians, they are far ahead of the others in the agency, and a large percentage of the trouble that occurs here is caused by visiting Indians.

Their spiritual welfare is attended to by the Presbyterian Church, and a regular weekly service is held in the mission church in the village. There is a Sioux boarding school in the town, with accommodation for forty pupils, that receives a per capita grant from the government for twenty pupils. During the year the principal, Miss Fraser, and Miss Baird, teacher, retired from the work, and were succeeded by Mr. W. A. Hendry, as principal, and his sister as teacher, who are much interested in the institution and are carrying on very successful work.

Manitowapah Agency.

There are ten reserves in this agency, of which Sandy Bay is in Treaty No. 1; Pine Creek, and Shoal River, in No. 4; and the rest in No. 2.

Reserves.—Sandy Bay reserve is situated on the southwest shore of Lake Manitoba, in township 18, range 9, west of the 1st meridian. It has an area of twelve thousand one hundred and sixty acres, the greater part of which is covered with scrub and bush. It is not suitable for grain-farming, although there is sufficient good land for gardens, and a fair supply of hay.

Lake Manitoba reserve is situated on the northeast shore of Lake Manitoba, in township 22, ranges 8 and 9, west of the 1st meridian. It has an area of nine thousand four hundred and seventy-two acres. It is much broken by arms of the lake, is covered by a heavy growth of brush and timber, and quite unsuited for farming. There is enough good land for gardens and a good supply of hay.

Ebb and Flow Lake reserve is situated on the west shore of Ebb and Flow lake, in townships 23 and 24, ranges 11 and 12, west of the 1st meridian. It has an area of ten thousand eight hundred and sixteen acres. It is unsuitable for farming, but has a good supply of hay and plenty of timber.

Fairford reserve is situated on the Fairford river, in townships 30 and 31, range 9, west of the 1st meridian. It has an area of eleven thousand seven hundred and twelve acres. It is well supplied with good timber and hay, and has plenty of good land for gardens; but up to the present time grain has not been grown with any degree of success.

Little Saskatchewan reserve is situated on the west shore of Lake St. Martin, in township 31, range 8, west of the 1st meridian, and has an area of three thousand two hundred acres. It is well supplied with wood and hay, but is not adapted for farming.

Lake St Martin reserve is situated on the north end of Lake St. Martin, in township 32, ranges 7 and 8, west of the 1st meridian, and has an area of four thousand and thirty-two acres, is well wooded and not adapted for farming.

Crane River reserve is situated on the east side of Crane river, in township 29, range 13, west of the 1st meridian. It contains seven thousand nine hundred and thirty-six acres. There is a quantity of good spruce timber and sufficient good land for gardens. There is hardly enough hay-land here for the herd of cattle that shows prospects of growing numerous, but an extension of the hay-land is anticipated.

Waterhen River reserve is situated at the south end of Waterhen lake, in township 34, range 13, west of the 1st meridian. It has an area of four thousand six hundred and eight acres. It has a good supply of timber and hay, but is unsuited to farming.

Pine Creek reserve is situated on the west shore of Lake Winnipegosis, in township 35, ranges 19 and 20, west of the 1st meridian. It has an area of nine thousand one hundred and fifty-two acres, and is well supplied with hay and timber. On January 6, 1902, His Excellency the Governor General in Council was pleased to order that fractional townships 35, 36 and 37, range 19, west of the 1st meridian, be set apart and

appropriated as an addition to the Pine Creek reserve. This will give an additional area of about six thousand acres approximately ; it is principally covered with black and white poplar with a few spruce in clumps scattered through.

Shoal River reserve is composed of one small reserve on Swan lake and four small reserves near the mouth of Shoal river, which is situated at the south end of Dawson bay on Lake Winnipegosis. They have an area altogether of about five thousand five hundred acres. They are all well wooded with poplar and some spruce intermixed, they have sufficient hay-land, but are not adapted for farming.

Tribe.—Nearly all the Indians in this agency are Saulteaux, but the members of the Shoal river band are principally Crees. There are a number of French, English, and Scotch half-breeds, in fact there are very few pure-blooded Indians in the agency.

Vital Statistics.—The population of the different bands at the last annuity payments was as follows: Sandy Bay, two hundred and fifty-nine ; Lake Manitoba, ninety-six ; Ebb and Flow, fifty-seven ; Fairford, one hundred and ninety-four ; Little Saskatchewan, one hundred and eleven ; Lake St. Martin, one hundred and thirty-two ; Crane river, fifty-four ; Waterhen river, one hundred and forty-two ; Pine Creek, ninety-one ; Shoal river, one hundred and fifty-nine ; making a grand total of twelve hundred and ninety-five souls.

Health and Sanitation.—The health of the Indians generally has been good during the past year, and except at Pine Creek no epidemics have prevailed. Small-pox broke out amongst the half-breeds living alongside the Pine Creek reserve, and measures were at once taken to vaccinate all the Indians and quarantine the reserve. However, four cases of a mild type developed on the reserve, but were given thorough attention and ran their course without fatal results. All the Indians of the other reserves were vaccinated and established a quarantine amongst themselves, with the result that not a single case developed there, although small-pox was in the vicinity of some of them. Three of our Indians belonging to the Lake Manitoba reserve caught the disease near St. Laurent and were quarantined and attended to by the municipality without any fatalities. Scrofula and consumption are always to be found on all the reserves, but apparently to a much less extent on those reserves adjacent to the lakes where the Indians have more or less of a fish diet, and there is yet good hunting to be had in the vicinity. Probably the exercise necessary to a successful hunter and the fresh air have something to do with this.

The ordinary sanitary precautions are always carried out, and as the majority of the Indians go into tents in the spring and are continually moving their camp-ground, it precludes the possibility of an epidemic arising in the summer-time from want of sanitation, and in the winter-time nearly every house has a fireplace, which is the best ventilator they could possibly have I think one of their greatest sources of disease is their pernicious habit of eating the flesh of horses and cattle that have died of disease, tainted meat given to them that was unfit for sale, and diseased offal from the slaughter-houses in the towns.

Resources and Occupations.—Apparently the most profitable industry in sight at present for the Indians of this agency is cattle-raising, and I cannot see any reason why it should not be carried on progressively and increased to a much greater extent. They take fairly good care of their stock, but will take better care of a steer than a heifer, because the steer will be sold next year and bring cash, and the heifer will only be kept to increase the herd. The great trouble is to get them to look after the breeding and keep their cattle until they are matured. With plenty of fish in the lake close at hand and considerable game yet in the bush, it is not much wonder they do not take the interest in civilized industry that we would like them to. They all hunt and trap more or less, and some make a good deal of money at it. During the summer season many dig senega-root, pick berries, assist at the fisheries and as boatmen on the lake, and as soon as harvest commences, there is work for all that will take it until the snow flies.

Buildings and Stock.—The buildings are all of log, and are better adapted for the Indians than frame, as they are so much easier for them to repair and keep warm. Nearly all have lumber floors, and many have good shingle roofs. Some of their houses

will compare very favourably with the log houses built by the settlers. In the winter, when the walls are whitewashed and a good fire in the fireplace, it is wonderful how cozy they are.

The cattle came through the winter in good condition and without loss, and there has been a very good crop of calves, but on those reserves where very young bulls were supplied last year there were a number of barren cows, which I expect will be rectified this season. There will be some difficulty in getting a supply of hay this year on account of the high water flooding the hay-meadows, and many were unable to use mowing-machines and had to be furnished with scythes. This will make it much harder work, but I think a little later in the season the water will lower, and sufficient for requirements will be obtained. The Indians take fairly good care of their cattle, but much better care of their ponies, as they will go to five times the trouble to care for a five dollar cayuse than they will for a thirty dollar steer. This is accounted for to a great extent, I think, by the fact that for generations an Indian's wealth was calculated by the number of ponies he owned, and the old instinct still prevails.

Education.—At Pine Creek there is a large, stone, Roman Catholic boarding and day school situated only a few yards off the reserve, on land owned by the church. It is 114 x 48 feet, three stories high and basement, with a staff of professional teachers from the order of the Rev. Franciscan Sisters. It receives a per capita grant from the government for fifty-five boarding pupils and fifteen day scholars. Good work is being done in the school-room and the whole institution is conducted in a most excellent manner. During the past year a steam heating plant has been put in all over the building, and saw-mill machinery purchased and set up in a new building erected for the purpose, there is a planer-machine attached, and the whole is run by an eighteen horse-power gasoline engine. There is a day school at all the other reserves and two at Fairford, which have been kept open and taught regularly, with the exception of Waterhen, for which the church has not been able to secure a teacher. The attendance at the day schools is most irregular, but it cannot be expected to be otherwise so long as the Indians go away on hunting trips, and it is impossible for them to live without hunting, and working for the settlers. Consequently the education received at the day schools is not very advanced, yet one can plainly see the effects of day school teaching in the young men and women when they go out to work for white people, and have to understand and speak English.

Religion.—The Church of England has churches at Upper Fairford, Little Saskatchewan, and Shoal River; the Baptists at Lower Fairford and St. Martin's; and the Roman Catholics at Sandy Bay, Lake Manitoba, Waterhen River, and Pine Creek. It is impossible for one to say what success attends the missionaries' efforts, as the Indian is such a backslider. But one thing I should very much like to see, and that is, that the different religious bodies would agree to have only one denomination on each reserve. When there are more, they bring doubts as to which is right to the Indian's mind, and then he often reverts to pagan worship for satisfaction.

Characteristics and Progress.—One of the greatest obstacles that we have to contend against is the Indian's most determined objection to provide ahead for the rainy day. So long as he has money in his pocket or can get a little credit anywhere, he cannot see any necessity to work, and will go off on long trips to visit friends, without making the slightest effort to provide a supply of food for the winter. And the food supplies issued by the government to the destitute are rather inclined to encourage this. After completing the annuity payments at Swan Lake this year the newly elected councillor, George Beatty, presented himself at the farmer's house and requested him to cut off his long hair; his request was complied with, as also were several similar requests from young men. Now this in itself may seem a very small thing to one who is not familar with Indian customs, but in reality it is parting with one of the most potent traits of Indian character, and in some of the tribes means the deepest of mourning.

Progress is very slow so far as it is visible, but there are many ways of making progress that do not show to the ordinary onlooker, such as manners, methods, customs, and ideas of earning a living in a civilized way, instilled into the Indians by working for the white settlers. Such progress is much more lasting when adopted of their own

accord than when received from an agent of the government who, in their suspicious nature, must have some hidden purpose which will not be to their benefit. It is quite plain that the more the government assists them, the more they will ask for and expect, and cast up to the agent that they are entitled to ever so much more if the treaty were fulfilled.

After taking into consideration their suspicious nature and disposition, and their habit of associating from choice with the crookedest class of whites, one cannot expect to see any very conspicuous advancement in whole bands, but there are individual cases in every band that show up head and shoulders above their fellows, and these are the ones we have to encourage and advise, and uphold as examples. In working for the white farmers, I am inclined to think, they learn much more than they would on the reserves and it is thus a good school for them to learn how to manage their own affairs on the reserve.

Temperance and Morality.—I have heard there was liquor on some of the reserves on Lake Manitoba, but on investigating the matter, no proof was forthcoming. There is no doubt the Indians get liquor when they are working near the towns, but it is usually bought by half-breeds or white squawmen, and it seems impossible to get a conviction. The ordinary Indian will swear to anything that he is paid for in a liquor case, and if caught giving false evidence, will clear himself by saying he did not understand the interpreter, his conscience is quite pliable, and many of the officials on the bench are dubious about accepting Indian evidence, and apparently see no great harm in an Indian having a little spree.

When there is liquor among them, there is no doubt their morals suffer; but when at home away from the towns, I hear of very little immorality amongst them.

General Remarks.—When making the treaty payments, I made a thorough examination of everything around their houses, stables, gardens, and live stock, and outside of the trouble caused by high water in the lake and hay-meadows, I consider these Indians in comfortable condition and progressing satisfactorily.

The teachers on all the reserves have given me their earnest and hearty support in carrying on the affairs of the agency.

I have, &c.,

S. SWINFORD,
Indian Agent.

MANITOBA SUPERINTENDENCY,
LAKE MANITOBA INSPECTORATE,
PORTAGE LA PRAIRIE, September 15, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to present my fifth annual report upon Indian affairs in this inspectorate during the fiscal year ended June 30, 1902, and to the date above mentioned in the present fiscal term. This inspectorate includes three agencies, namely: Portage la Prairie, Manitowapah, and the Pas. The two first are situated within the province of Manitoba, and the last in the district of Saskatchewan, N.W.T.

PORTAGE LA PRAIRIE AGENCY.

The reserves of this agency are all conveniently situated to this office by rail and mail, and are frequently visited. The Indians are of the Ojibbewa tribe, mostly pagans.

The population at the annuity payments this year was four hundred and sixteen, as compared with four hundred and thirty-eight last year. There are three reserves in the agency, viz.: Long Plain, Swan Lake and Roseau.

Long Plain Band.

Reserve.—This reserve is situated on the Assiniboine river, about fifteen miles southwest of Portage la Prairie. The reserve is heavily wooded. About one hundred and fifty acres have been brought under cultivation. The soil in the valley of the river is excellent. On the high lands it is light and sandy. About sixty-five acres is under crop this year and promises a heavy yield. The members of this band cannot be induced to do much farming, they claim that they can make a better living by working as labourers for the surrounding white settlers. Most of them have horses, and a few have cattle.

Resources and Occupations.—The Indians of this band make a very easy living. They can always find employment when they want it, in the summer in the fields or on railway construction, and in the winter by chopping and selling dry wood off the reserve. Wages are high this fall, and many of our Indians are making as high as $2.50 per day and board. The Indians of this band are a contented lot and make very few requests for assistance. Their numbers are continually decreasing, but this does not appear to give them much concern, all they think of is the present, the future may provide for itself. They are generally well clothed, and well fed. The houses on the reserve are poor, the Indians are away from home so much that little attention is given to home comforts.

Religion and Education.—They are all pagans, have no use for churches or schools. Missions of different denominations have time and again tried to do something for them, but without success, they will have none of it. I have talked with them time after time about their debased condition with little, if any, effect; they make great promises of reform, but soon forget them. I have little hope for their future unless they remove to some isolated locality, away from settlement and the contaminating influence of the lower strata of our white and half-breed population. Liquor is largely accountable for their present condition; this they obtain in spite of the closest supervision.

Swan Lake (Yellow Quill's) Band.

The reserve of this band is situated on the Canadian Northern railway (Morris and Brandon branch). The railway runs diagonally through the reserve. Indian Springs station is located near the centre of the reserve. This is a great convenience to the band. The reserve comprises the greater part of township five, range eleven, west, with an auxiliary known as 'Indian Gardens,' being section eleven, township nine, range nine, west. The principal reserve is beautifully situated on the north side of Swan lake, a lovely sheet of water about five miles in length, by one mile in width. The land is mostly high rolling prairie, interspersed with poplar bluffs. There is a large hay-meadow on the margin of the lake, sufficient for the requirements of the band. The soil is good, and well adapted for mixed farming. The auxiliary reserve is situated on the Assiniboine river. It is a very valuable grain section, no better in the province. This is the home of the old chief, Yellow Quill, and his family and a few old-time followers.

Progress.—I am pleased to be able to state that these Indians are making good progress, formerly they were a very hard unmanageable lot, but owing to the exertions of the farm instructor, ably assisted by the school teacher, the improvement is quite apparent. The Indians are staying at home better, building larger and more comfortable houses, enlarging their fields, and giving better attention to their cattle. We are giving the Indians of this band special attention in order to try to induce the young energetic men of other bands in the agency to join them, thus saving a remnant of this fast decaying agency. This year a new house and stable have been erected for the use of the farm instructor; he has been supplied with a team of good horses; forty acres

of land has been broken up this season by the farmer; the idea is to make this a model farm on a small scale as a pattern for the Indians.

Agriculture.—About one hundred and seventy acres is under crop this year on the principal reserve, and seventy acres at Indian Gardens. Reports just received state that it will be a great yield. A considerable area of new land has been broken up for crop next year.

Cattle.—These Indians have a fine herd of cattle, which are well taken care of. Next year they will begin to have stock for market.

Religion and Education.—Most of the band are still pagans. The school teacher acts as missionary for the Presbyterian Church, and reports that he has many quiet inquiries about the white man's religion. He hopes ultimately to Christianize most of them; I fear he has undertaken rather a heavy contract.

The day school has been open for over a year, with fair success. The attendance is not so large as we had expected, but an increase is looked for from this out. A night school is held in the winter season for the benefit of the young men.

Buildings.—The school-house is a new frame building with dwelling for the teacher above. The buildings for the use of the farm instructor are of logs, but made very comfortable. The department has a substantial frame granary. The Indians are putting up a better class of houses, and vie with each other as to who shall have the best.

Roseau Bands.

Reserve.—The principal reserve of these bands is situated at the confluence of the Red and Roseau rivers; there is an auxiliary to this reserve located on the Roseau river about eleven miles from the main reserve. The land of both reserves is first class, and well adapted for mixed farming, there is hay in abundance, and there is plenty of wood for the use of the Indians on the banks of the rivers. The principal reserve is only two miles distant from the Canadian Pacific and Canadian Northern railways, the thriving village of Dominion City to the east on the Canadian Pacific railway, and Letellier to the west on the Canadian Northern railway.

Progress.—I cannot report progress for the Indians of these bands, they are at a stand-still, and it seems impossible to move them, they are a stubborn lot, and will not be advised. They make an easy living most of the time when they will condescend to work. I cannot see anything bright in the future for them. They have the most valuable reserve in the province, but this is no incentive to them.

Farming.—They farm a few acres in a slipshod manner; this season, the crops they have are good.

Cattle.—They have quite a herd of cattle, and take fair care of them; there is any quantity of hay close at hand.

Religion and Education.—About two-thirds of the band are pagans, the rest Roman Catholics. The Roman Catholics have a church on the reserve proper. The Indians living at the auxiliary reserve have asked for a day school; the question is now under consideration.

Dwellings.—The dwellings are poor, most of the Indians spend the greater part of the year off the reserve, they have no ambition to improve their home surroundings.

MANITOWAPAH AGENCY.

In this agency there are ten reserves, namely:—Sandy Bay, Lake Manitoba, Ebb and Flow Lake, Fairford, Little Saskatchewan, Lake St. Martin, Crane River, Waterhen River, Pine Creek, and the newly added reserve of Shoal River, lately attached to Pelly agency. These reserves are all situated on Lake Manitoba, Lake Winnipegosis, or contiguous waters. As the similarity is so marked between all the reserves of this agency, I will report upon the agency as a whole, instead of by reserves.

Reserves.—They are all situated upon water fronts, the lands are low, and largely covered with timber. This year owing to the very high stage of water in the lakes and rivers, many of them are almost submerged. There is very little land on any of them fit for cultivation, the land that is dry enough is as a rule very stony. As a general thing, hay is abundant, but the last three seasons it has been very hard to get on account of high water.

Tribe and Population.—Most of the Indians in this agency are Ojibbewas; there are a few Swampy Crees.

The population at the annuity payments this year was one thousand one hundred and thirty-six, as compared with one thousand one hundred and fifty-two last year.

Progress.—Despite the unfavourable agricultural conditions prevailing this year owing to the overflow of the lakes, I find that considerable progress has been made although the gardens are not nearly so good as usual; as an offset to this, the Indians are building better houses, and gradually surrounding themselves with more of the necessaries and comforts of life. The fishing and lumbering industries give employment to many of them, wages are high, and labour in great demand. Quite a number of the able-bodied men are now down in this locality assisting in harvest operations. The money thus earned will be largely expended in procuring the winter's supply of provisions and clothing. The Indians are contented, we found very few cases of destitution, they themselves acknowledge that they have never been so prosperous. The Fairford, Little Saskatchewan and Lake St. Martin bands obtain almost constant employment at the gypsum mines in their locality.

Cattle.—All the bands of this agency have cattle and horses; the herds are increasing slowly, the Indians are beginning to appreciate their value. The great difficulty in procuring hay, owing to the cause before mentioned, is a serious problem this year. At Fairford great interest is taken in stock-raising. Councillor Storr, of this band, has eleven head of fine three-year-old steers for market this fall. This man is milking eighteen cows this summer, has a cream-separator, in fact almost everything usually found around a well-appointed farmhouse. The example of a few men like this has a very stimulating effect on the other members of the band.

Buildings.—A great improvement is noticed the last few years in the size and finish of the dwellings, they are larger and better built, many of them are partitioned off into separate apartments; they are kept in better order than formerly. The school buildings are comfortable, a new one is about completed at Ebb and Flow. At Pine Creek the Roman Catholics have a fine large stone building used for boarding, day school and church purposes. There are churches on nearly all the reserves.

Religion.—The Indians of this agency are nearly all Christianized, their religious welfare is closely looked after by the various denominations labouring among them.

Education.—Day schools are maintained on all the reserves, I regret that it is often difficult to procure teachers, the school at Waterhen river has been closed for some time from this cause. I cannot say very much for the advancement of the pupils in the day schools, the roving habits of the parents, combined with their indifference to the education of their children, is the greatest drawback; another is that they stop going to school too young, very few pupils over twelve years of age are found in regular attendance; there are a few exceptions to this rule, notably at Fairford and Lake St. Martin. The Roman Catholic boarding school at Pine Creek, under the management of Rev. Father Bousquet, assisted by an able staff of trained teachers and attendants, is doing excellent work.

Morality and Temperance.—Regarding the morality of the Indians of this agency, during the past year they have fully maintained their reputation as a law-abiding people, a few trivial cases have been investigated, but nothing of importance; so far as actual crime is concerned, they will compare favourably with any community. Owing to the isolated situation of the reserves in this agency, the use of intoxicants is almost unknown.

Crow Child and Family, Sarcee Reserve, Alta.

THE PAS AGENCY.

In this agency there are seven reserves, viz:—Grand Rapids, situated at the mouth of the Saskatchewan on Lake Winnipeg; Chemawawin, on the Saskatchewan entrance to Cedar lake; Moose Lake on Moose lake; the Pas on Saskatchewan river, Cumberland on Indian Pear Island lake, Red Earth, and Shoal Lake on the Carrot river. The population at the annuity payments, 1901, was one thousand one hundred and fifty-four, an increase of fifteen over the preceding year. The Indians of this agency are Swampy Crees. Fishing and hunting are their principal occupations. The reserves, like those mentioned in the preceding agency, are low, and this season have been nearly under water. During the last three years the Saskatchewan has been very high, this year it is higher than ever, Moose and Cedar lakes are three feet above normal level, in fact the whole lower Saskatchewan country resembles a great inland lake, water everywhere. The reserves with the exceptions of Shoal lake, and Red Earth, are situated on slight limestone elevations which are found here and there through this section of country.

Progress.—Notwithstanding the unfavourable conditions existing owing to high water, this agency is making some advancement, especially is this noticeable at the Pas, or principal reserve; here an air of thrift prevails unknown to those acquainted with its former condition. Some twenty houses are under construction, quite a number are already completed. The other, and smaller reserves are also making progress, though in a lesser degree. A considerable area was planted last spring in potatoes and other vegetables, but owing to the great freshets in June and July, the greater part of the gardens have been submerged and ruined, a few patches are left here and there on the highest spots; an exception is noticed at Shoal Lake, and Red Earth. These reserves are situated some distance up the Carrot river and are not affected by the Saskatchewan. The thrifty condition of the Indians is due to fur and fish being exceptionally plentiful last winter and spring; musk-rats, the principal fur-bearing animal, was very abundant, the Indians made large amounts from the catch. Traders and fur-buyers were attracted to the locality, with the consequence that the hunters derived better value for their furs than heretofore. Fish also are very plentiful; to my knowledge all the Indian has to do to insure a meal is to set forty or fifty feet of net for a few hours, then take it up, with the result that he has a food supply for a day or two. I noticed no less than five different varieties taken in at one haul,—whitefish, goldeyes, pickerel, jacks and suckers. This easy mode of obtaining food is not conducive to thrift, but it suits the Indian exactly. For Indians following the Indian mode of life, this agency is unsurpassed. Two mornings that I was around early at the Pas I noticed that the Indians did not take the trouble to go away in their canoes to hunt for ducks, they just sat down on a stone or a log in front of their houses, and shot them as they passed over.

Cattle.—If the high water continues another year or two, it will be useless to continue trying to raise cattle, it has been with the greatest difficulty that hay has been procured the last three years, the Indians are discouraged at the outlook, and it required considerable persuasion to have them make another effort this year. It is a surprise to me how they brought their cattle through last winter; this year it is still worse. Under these discouraging conditions it is questionable whether it is advisable to continue urging the Indians to keep stock, there is little if any market for them, and they do not require them for food, as game is so plentiful.

Education.—There are day schools on each reserve. A difficulty has been found the past year in procuring teachers; at the time of my inspection two schools were without teachers, but the vacancies were to be filled shortly.

I cannot report much, if any, progress, Indian day schools as a rule are most discouraging institutions to inspect, sometimes they make progress for a year or two under an enthusiastic teacher, a change takes place and in two or three months they go back to the old level; the pupils read a little English, like a parrot, they do not understand it, simply learn to repeat the sound given them by their instructor, they hear nothing but their mother tongue at home and on the play-ground, in fact Cree is the language of the country, and spoken by nearly all, even the children of English-speaking parents use the Cree in conversing with each other. I am fully convinced that Indian children

will never be taught to speak or understand any other than their own language in our day schools. All the schools in this agency are under the auspices of the Anglican Church.

Religion and Morality.—These Indians are nominally all Christians of the Anglican Church. They are law-abiding and obedient to the powers that be, mild in temperament and disposition; in my five years experience in this agency, I have never had a case of actual crime.

Portage la Prairie Sioux.

The population of this band is about one hundred and twenty. These Indians own twenty-six acres of land, purchased by themselves, situated on the bank of the Assiniboine south of this town.

I cannot report them as in as flourishing condition as last year, this spring the river overflowed its banks, the water was three feet deep in the Indian village, they lost a lot of their portable effects, some of their houses were washed away.

However, they are gradually getting back again to their old condition, and will be all right before the winter sets in.

They are making an excellent living this year, labour is in great demand, and both men and women are in constant employment.

I cannot say that their morals are improving, they are too close to the town where intoxicants are easily procurable, it is not much trouble for them to get liquor if they have the money. Fines, and sometimes imprisonment, make little impression on them. Except for intemperance, there is very little crime amongst them.

The Sioux boarding school has been for the last year under the supervision of Mr. W. A. Hendry. It is a well conducted institution, and continues to do good work; twenty-four pupils are attending at present. It is operated under the auspices of the Presbyterian foreign missionary society.

Health and Sanitation.—The past year has been an anxious one in this respect. In October last typhoid fever was reported at the Roseau reserves, Portage la Prairie agency. Investigation showed that there were several cases of fever among adults, and almost an epidemic of cholera infantum, turning to fever, among young children. Prompt measures were taken to stamp out the disease, but I regret to report eight deaths of children, the adults all recovered; most of the deaths had occurred before the Indians reported the matter. On January 3, small-pox was reported at, or near, Pine Creek reserve, Manitowapah agency. In company with Dr. Harrington, I went out and found two cases, half-breeds, living on the border of the reserve. Quarantine regulations were enforced and vaccination made general. Before the disease was finally stamped out, there were between eighty and ninety cases among the half-breeds, and nine on the reserve. The Indians on the reserve had nearly all been previously vaccinated, hence the small number contracting the disease. Only one death occurred, that of a non-treaty child. The disease was of a very mild type. Two other cases occurred of Indians belonging to this agency, members of the Lake Manitoba band; they contracted the disease on a survey party, off the reserve. They were attended to by the Municipality of St. Laurent. On February 4, suspected cases of small-pox were reported at Grand Rapids reserve, Pas agency. On the 7th, in company with Dr. Hislop, I started for that place, vaccinating, en route, all Indians and others within the boundaries of the agency. We arrived at Grand Rapids on the 18th, and found the suspected cases to be chicken-pox, which had been epidemic among all the young children of the band, and just about run its course by the time we arrived. On our trip to Grand Rapids, we found one well developed case of small-pox at a fishing station on Cedar lake. This we quarantined, thus preventing the spread of the disease to other localities. The case was the worst I have seen, and was within a day's travel of two of the reserves. All the Indians and half-breeds of the agency were vaccinated except those of Shoal Lake and Red Earth, vaccine matter ran out before we could reach them. Owing to the isolated position of these reserves, we thought they would be safe. In this we were mistaken, the disease broke out at Shoal Lake in April, and out of a total population of seventy, there were twenty-two cases; all recovered.

The school teacher, Louis Cochrane (an Indian), deserves great credit for the way he handled this outbreak and prevented its spreading to other reserves. The vaccination done last winter was very successful, and so far as vacination is a preventive, I think that this inspectorate is fairly safe.

With the exceptions before noted, the general health has been better than last year. I notice a smaller number of tubercular cases than usual, and am inclined to think that this disease is decreasing in the northern agencies.

General Remarks.—I regret to report the death of Chief Richard Woodhouse of the Fairford band (a lithographic protrait of this man is the frontispiece in the last annual report). His death occurred in June last. He was a splendid specimen of his race, morally, mentally and physically. His death is a serious loss to this important band. It is largely owing to his capable administration that this band is the banner one of my inspectorate, as chief he held the balance true between his people and the department. The band has elected his son to take his place. Since my last report, I have inspected all the bands and reserves in the inspectorate. The annuity payments for the current year have been made. The work of agents, farm instructors, and others connected with the inspectorate has, in most cases, been faithfully performed.

I have, &c.,

S. R. MARLATT,
Inspector of Indian Agencies.

PROVINCE OF MANITOBA,
LAKE WINNIPEG INSPECTORATE,
WINNIPEG, July 29, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my twenty-fifth annual report for the year ended June 30, 1902.

CLANDEBOYE AGENCY.

Reserves.—The three reserves comprising this agency are, firstly, St. Peter's, situated along both sides of the Red river near where it empties into Lake Winnipeg, and extending from the town of Selkirk to within a few miles of the lake shore, covering an area of eighty square miles; Brokenhead River, about thirty square miles in area, lying along the river of the same name, which also empties into Lake Winnipeg east of the Red river; and lastly, Fort Alexander, extending for an area of almost thirty-two square miles along both sides of the Winnipeg river, where it flows by way of Travers bay into Lake Winnipeg.

Rich in the black alluvial soil of the Red River valley, and extending through a fringe of poplar, ash-leaf maple and elm, back to the prairies and hay-lands, St. Peter's reserve is an ideal place for mixed farming. The low lands at the north end of the reserve are flooded in the spring, and in the haying season they yield an abundance of the highest quality of nutritious fodder.

Brokenhead River reserve is more wooded, and the land though good is of a lower grade than that of St. Peter's, the part of it near the lake being very low and gradually rising to the high arable land up the river. The reserve at Fort Alexander is largely woodland along the river bank falling back to muskeg. The soil where the banks have

been cleared and cultivated, gives excellent results, but hard work is required in clearing a sufficient area before much advantage can be gained from it. For hay-lands the Indians of this band are obliged to go to Jackfish creek, several miles from the mouth of Winnipeg river in a westerly direction. If, however, the land back in the reserve were drained by several ditches into the river, an abundance of hay could be obtained on the reserve itself, and the caving away of the river banks, which is caused by the water draining underground through them, would also be remedied.

Tribe.—The Indians of this agency are a mixture of Ojibbways and Swampy Crees, the latter of which emigrated from the shores of Hudson's bay. A large number of them have more or less white blood in their veins.

Vital Statistics.—The population of St. Peter's this year is one thousand and seventy-five, made up as follows: two hundred and seventy-seven men, two hundred and fifty-eight women, two hundred and seventy-four boys, and two hundred and sixty-six girls; of Brokenhead River, one hundred and seventy, of whom forty-nine are men, thirty-nine women, thirty-eight boys, forty-four girls; of Fort Alexander, four hundred and sixty-nine, made up as follows: one hundred and twenty-five men, one hundred and thirty-four women, one hundred and sixteen boys, and ninety-four girls; giving a total of seventeen hundred and fourteen, consisting of four hundred and fifty-one men, four hundred and thirty-one women, four hundred and twenty-eight boys and four hundred and four girls. The number of births at St. Peter's was forty-six, deaths thirty-six; at Brokenhead River, births five, deaths four; at Fort Alexander, births nineteen, deaths twenty-two; making a total of seventy births and sixty-two deaths in the agency.

Health and Sanitation.—The Indians of this agency are on the whole healthy, except for tubercular trouble, such as consumption and swollen glands, which occur to a large extent in the younger generation. An epidemic of small-pox visited Brokenhead River and Fort Alexander reserves this spring, being carried there by Indians working at lumber camps where it broke out. Medical attendance was sent immediately and the infected houses were quarantined, while all who were not immune by former vaccination were vaccinated with so good effect that the disease did not spread at all, not even, in some places to members of the same household. The cases on these reserves were all of a mild type and no deaths resulted from them. The dwellings of the Indians in this agency are kept exceptionally neat and clean, being generally whitewashed within and without, which is a very effective preventive of infectious diseases.

Resources and Occupations.—As stated above, St. Peter's reserve offers splendid advantages in agriculture and stock-raising, but moreover there is to be found at certain seasons of the year in the Red river an abundance of catfish, which is readily bought by the fish companies. In winter a large revenue is earned by cutting and hauling to market dead and dry cord-wood from the reserve, and the large quantity of hay which cannot be utilized by the Indians for their own stock. A large source of income is also found in wages earned in working at Selkirk and throughout Lake Winnipeg for the fish, lumber and transportation companies, from whom the Indians receive steady employment and good wages. On the whole the Indians of St. Peter's band have the advantage of being able to find an easy and comfortable living whatever they wish to employ themselves at. The people of Brokenhead River are for the most part inactive, though a few are doing well at farming. Their main source of livelihood is in fishing for sturgeon, catfish, pike and pickerel, and shooting wild ducks in season, which are sold at a good price to Messrs Ewing & Fryer, who have a freezer on the reserve. They also find employment in picking and selling blueberries and other small fruit, digging senega-root, and working at stone quarries. At Fort Alexander hunting for fur-bearing animals, deer and moose is still carried on to some extent, although at St Peter's and Brokenhead the hunt is chiefly confined to musk-rats, which swarm in the marshy land around the reserves. Sturgeon are taken in abundance up the Winnipeg river from Fort Alexander, and tug-boats run from Selkirk at intervals to buy up the supply. The farms and gardens along the river banks mark the industry of the people of this reserve, and large herds of cattle and horses may be seen grazing. Some of the members of this band have even seen the advisability of raising their own pork, and quite a few pigs are to be found on their premises.

Buildings.—In this agency the buildings are for the most part log structures, shingled and floored, either painted or whitewashed. Frequently the houses have two stories and a few frame buildings have been built in St. Peter's. Inside these houses may be found pianos, organs, sewing-machines and excellent furniture, than which no greater proof could be got of the rapid improvement and civilization of the Indians.

Stock.—On all the reserves large herds of cattle and horses are found, but more especially at St. Peter's, where hay is so easily obtained. Thorough-bred animals have from time to time been given by the government to the different bands to improve their stock, and as a result the cattle are very superior. On St. Peter's reserve mowers and rakes, drawn by horses, are used altogether in making the hay. On this reserve are also to be seen sheep, pigs, chickens, and even several young turkeys. The few industrious members of Brokenhead River band have their cattle and horses in good condition, but the larger part do not own any stock. At Fort Alexander, horses, cattle and pigs are raised to quite an extent, although the last named are harassed somewhat by the Indian dogs.

Farming Implements.—Besides ploughs, harrows and smaller implements such as scythes, hoes and spades, which are to be found in all places where farming is carried on to any extent, a large number of mowers, horse-rakes, wagons and sleighs are owned by the Indians of St. Peter's band, who use them well in earning their living. Considering, however, that one hundred and three heads of families farm on this reserve, the number of implements is not very great in proportion. At Brokenhead River very little farming is done, and consequently there are not many implements, but one or two enterprising members of the band have mowers and horse-rakes for their haying. The Fort Alexander Indians are very industrious with their farms and make good use of the implements they have, but as they are too far from market to sell hay and have to go a long distance to get it, they cut just what they require themselves with scythes.

Education.—There are five day schools in operation on St. Peter's reserve,—four Anglican, of which one is situated on the west bank of the Red river about two miles from Selkirk, one at Clandeboye, two on the east side of the river about seven and nine miles below Selkirk, respectively, and one Roman Catholic situated on the east bank of the Red river at about the centre of the reserve. The attendance on the whole is good, though it is sometimes reduced owing to parents taking their families with them to the mouth of the river when they are fishing. The teaching is chiefly limited to the primary grades, since after this part of their education is completed the children are usually taken to attend the industrial schools at St. Paul's, St. Boniface or Elkhorn, where a practical training is given them. The majority of the parents desire that their children shall receive all the education they can get, as from their proximity to white civilization they have found the benefit of it. At Brokenhead River there is one school-house, about three miles from the lake, located a short distance back from the west bank of the river. Taking into consideration the wandering and indolent habits of this band, the attendance and progress is as good as could be expected. Fort Alexander has two schools in operation, one Roman Catholic and one Anglican, both situated on the bank of the Winnipeg river, the former about a mile and the latter between three and four miles up the river. Both are working well under the management of Mr. Gow and Mr. Barrett, respectively, and I may mention that Mr. Gow at his own expense painted the seats and desks in his school-house, which adds much to its appearance.

Religion.—Eight hundred and seventy-one Anglicans, ninety-five Roman Catholics, seventy-seven Baptists, eight of other denominations and twenty-four pagans are to be found at St. Peter's. There are seven places of worship on the reserve, as follows: the Anglicans have a stone church and four other buildings used as chapels at different points of the reserve; and the Baptists and Roman Catholics have each a frame church. The Indians take great interest in their religious services and the churches and outdoor meetings are always well attended. At Brokenhead River there is both an Anglican and a Roman Catholic mission. Their respective congregations number one hundred and twenty-five and twenty-three persons, while twenty-two members of the band still profess paganism. Fort Alexander has also an Anglican and a Roman Catholic church and mission, and the band is about evenly divided between these two denominations.

Characteristics and Progress.—Throughout this agency the Indians are steadily progressing, their mode of living is improving and they are becoming less dependent on others for their livelihood. Their gardens are more carefully laid out and contain a greater variety of vegetables, their houses are more substantially built and are better furnished than they were a few years ago. With the exception of a few at Brokenhead River, the Indians of these bands are very industrious, and their individual wealth is rapidly increasing. They are very shrewd in business transactions and will buy none but the best grade of clothing for themselves.

As an example of individual progress, I may mention Wm. Sinclair, ex-councillor of St. Peter's band. He has in his house an organ and sewing-machine, takes the newspaper, and is well informed in matters of political and general interest. He has, moreover, a fine farm, horses and cattle, a mower and horse-rake, and is in every way an example of industry and advancement. The same may be said of ex-chief William Asham, who is a preacher of the Church of England, and of several other members of the band.

Temperance and Morality.—At the treaty payments this year Detective Hossack accompanied me and there was no sign of drunkenness or intoxicants among Indians or white men on any of the three reserves. During the past year a strict watch has been kept against violation of the law in this respect, and in several instances arrests have been made and fines imposed. The better class of Indians in this agency will have nothing to do with intoxicants, but there are always a few who are willing to get liquor whenever it is available, and it is these together with the unscrupulous dealers who sell it to them that cause all the trouble.

As a rule, the morality is good on these reserves, but there are always several exceptions who adhere to the old native custom of sending away their wives and taking up new ones when they choose, but I am pleased to note that this is gradually decreasing.

I have, &c.,

E. McCOLL,
Inspector.

MANITOBA SUPERINTENDENCY,
RAT PORTAGE INSPECTORATE,
RAT PORTAGE, ONT., July 8, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report, together with statistical statement of the Rat Portage and Savanne agencies, and inspection of the Couchiching agency for the year ended June 30, 1902.

RAT PORTAGE AGENCY.

This agency comprises eleven bands, designated as follows: Rat Portage, Shoal Lake, No. 39, Shoal Lake, No. 40, Northwest Angle, No. 33, Northwest Angle, No. 34, Northwest Angle, No. 37, Buffalo Bay, Big Island, Assabaska, Whitefish Bay and Islington.

Rat Portage Band.

Reserves.—This band has three reserves, which are designated No. 38 A, B and C. The first named is situated on Clearwater bay, Lake of the Woods, area eight thousand acres; 38 B is situated on Matheson's bay, near the town of Rat Portage, area five thousand two hundred and eighty acres; and 38 C at the Dalles on the Winnipeg river, a distance of about ten miles north of the town of Rat Portage. These reserves are heavily timbered with poplar, spruce, jack pine, and also with a certain quantity of Norway pine. On reserves A and B, there are several veins of rich quartz bearing gold, amongst them the Sultana and the Ophir, the remainder consisting of hay and bottom lands.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last payment was one hundred and twenty-nine, consisting of thirty-five men, forty-one women and fifty-three children, and there was one birth and four deaths.

Health and Sanitation.—The health of these Indians has been fairly good. No epidemic has visited them, the deaths occurring being from ordinary causes, and mostly among children. Few of them suffer from scrofula, which appears to be the most prevalent disease among these Indians. The surroundings of their houses were properly cleaned up in the spring and refuse taken away and burned. With few exceptions, all have been vaccinated.

Resources and Occupations.—Their main resources are fishing, hunting and berry-picking. Some of them secured work in the lumber camps.

Buildings.—Their dwelling-houses, mostly built of logs, are small and none too comfortable.

Education.—The day school on reserve No 38 C has been closed for want of attendance. However, five of the children attend the Rat Portage boarding school and are doing fairly well.

Religion.—Thirty Indians of this band are members of the Church of England, thirty-four profess the Roman Catholic faith, and the remainder, sixty-five, are pagans.

Temperance and Morality.—I regret to state again that although a constant watch is kept, a great number of this band, both men and women, succeed in securing intoxicants from unscrupulous parties and consequently their morality is far from being good.

Shoal Lake Bands Nos. 39 and 40.

Reserves.—The reserves laid out and surveyed for these two bands are on the west shore and northwest of Shoal lake, and partly in the province of Manitoba, with an area of sixteen thousand two hundred and five acres. These reserves are timbered with spruce, poplar and cedar. Several good mining locations have been found on them.

Tribe.—The Indians of these bands belong to the Ojibbewa tribe.

Vital Statistics.—The population at the last annuity payment was one hundred and forty-five persons, namely, twenty-nine men, thirty-nine women and seventy-seven children. The number of births was nine, and of deaths seven.

Health and Sanitation.—The health of these Indians has been fairly good. There are a few cases of scrofula and consumption. All sanitary measures possible were attended to this spring, but the Indians are slow to become clean and tidy. With few exceptions they have all been vaccinated.

Resources and Occupations.—Fishing and hunting are their principal resources. A good number of them find employment with the mining companies, in the vicinity of their reserves and at the lumber camps.

Education.—There is no day school on these reserves, but the boarding school erected by the Presbyterian Church is completed and some of their children are in attendance.

Religion.—One hundred and forty-two of these Indians are pagans and the remaining three are Christians.

Temperance and Morality.—Several members of this band are still addicted to liquor, but a constant watch upon their movements was successful in preventing their securing liquor while in town, and the consequence was that less complaint has been received from that direction.

Northwest Angle Band No. 33.

Reserve.—The following reserves have been allotted to this band: 33A, situated on Whitefish bay; 33B at Northwest Angle. The combined area of these reserves is six thousand three hundred and ninety acres.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—The population at the last treaty payment was fifty-four, namely, thirteen men, sixteen women and twenty-five children. There were four births and three deaths.

Health and Sanitation.—The general health of the Indians of this band has been fairly good; there has been no epidemic. All sanitary measures were attended to as far as possible by having all rubbish around their premises removed and burned. With few exceptions, they have all been vaccinated.

Resources and Occupations.—Hunting and fishing are their main resources for a living. A few of them have little gardens.

Education.—There is no day school on the reserve. Thirteen children are of age to attend school.

Religion.—All the members of this band are pagans.

Temperance and Morality.—They are temperate and moral, few only of them being addicted to the use of intoxicants. But at the distance they live from where intoxicants are sold, they have few opportunities of satisfying their inclination.

Northwest Angle Band No. 34.

Reserves.—The reserves allotted to this band are the following: 34, Lake of the Woods; 34A, Whitefish Bay; 34B, first and secured parts in Shoal Lake; 34C, North west Angle, in Manitoba, and 34C, Lake of the Woods. The total area of these reserves is five thousand two hundred and forty-eight acres.

On some of these reserves there is a fair quantity of timber, namely, tamarack, spruce and poplar.

Vital Statistics.—The population of this band at the last payment was eighteen, consisting of five men, nine women and four children; there was one death and no births.

Health and Sanitation.—The health of these Indians has been fair. One of their councillors died during the winter of general debility. Their chief has been in poor health almost all winter. Their dwellings are kept clean and in a fair sanitary condition. All sanitary measures possible were attended to this spring. They have all been vaccinated.

Resources and Occupations.—Hunting and fishing and attending to their gardens are their principal occupations.

Stock.—Their stock is well taken care of, in good condition, and properly sheltered during winter.

Education.—There is no day school on this reserve. Only two children are of age to attend school.

Religion.—All the members of this band are pagans.

Temperance and Morality.—They are as a whole a temperate and moral band.

Northwest Angle Band No. 37.

Reserves.—This band has the following reserves allotted to it: No. 37, on Big Island; 37, on Rainy river; 37A, on Shoal lake; 37B, at Northwest Angle, Lake of the Woods; 37C, Northwest Angle river in Manitoba. The area of these reserves is nine thousand three hundred and forty-five acres.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last payment was ninety-five, consisting of twenty-one men, twenty-nine women, and forty-five children. There were five births and nine deaths.

Health and Sanitation.—The health of the majority of these Indians has been fairly good; there has been no epidemic of any kind. Lung and scrofula troubles are the ailments common to these roaming Indians. Their constant roaming about from one place to another makes it difficult to have them carry out the necessary sanitary measures regarding the cleaning of their dwellings and premises. With few exceptions, all have been vaccinated.

Resources and Occupations.—Fishing and hunting are their principal resources. They do but little gardening, excepting those families residing on reserve No. 37 Rainy river.

Stock.—Their cattle and horses are in a fair condition; more attention has been paid to them than formerly.

Education.—There is no day school on this reserve. These Indians are strongly opposed to education.

Religion.—Ninety-one members of this band are pagans and four are Christians, of which three are Anglicans, one is a Roman Catholic.

Temperance and Morality.—A great number of these Indians will take liquor whenever a chance of procuring it occurs, and it is only the rigorous manner in which the law is enforced that keeps them temperate. This, and the distance they live from where intoxicants are sold, give them few opportunities to indulge their appetite.

Buffalo Bay Band.

Reserve.—The reserve for this band is located on Buffalo bay, Lake of the Woods, in the province of Manitoba. Its area is five thousand seven hundred and sixty-three acres. The reserve is well timbered with different kinds of wood, interspersed with hay meadows and swamps.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last payment was thirty-five, consisting of ten men, twelve women, and thirteen children. There were two births and no deaths.

Health and Sanitation.—The health of these Indians was fairly good. Their dwellings are comfortable and in a sanitary condition.

Resources and Occupations.—Hunting and fishing are the main occupations of these Indians. A little gardening is also done by them and properly attended to.

Education.—There is no day school on this reserve; only two children are of age to attend school.

Religion.—All the members of this band are pagans.

Temperance and Morality.—They are on the whole a temperate and moral people.

Big Island Band.

Reserves.—This band has the following reserves allotted to it: 31A, on Nangashing bay; 31B and 31C, Lake of the Woods; 31D, E, F, on Big island; 31G, Lake of the

Woods; 31H and part of 31G, Big island, Lake of the Woods. The area of these reserves is eight thousand seven hundred and thirty-seven acres. Most of these reserves are well timbered with merchantable timber and a large quantity of other mixed wood.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last payment was one hundred and fifty-six, consisting of thirty-three men, thirty-nine women, and eighty-four children. There were four births and four deaths.

Health and Sanitation.—The general health of these Indians has been fairly good during the year and they have been free from epidemic. Although small-pox made its appearance in a lumber camp on Big island where some Indians were employed, none of them took the disease. Sanitary regulations have been as far as possible carried out, and with few exceptions all have been vaccinated. The Indians of this band are not stationary on their reserve, but always moving from camp to camp during the summer months.

Resources and Occupations.—Hunting and fishing are their main occupations. A number of them are employed in cutting wood for the lumber companies and thereby earn fair wages. They have also fair gardens of potatoes.

Stock.—Their stock is well cared for and properly sheltered.

Education.—There is no day school on these reserves, although there are thirty-eight children of age to attend school, scattered over the reserves. These Indians, however, do not seem to care to have their children educated.

Religion.—One hundred and fifty-three Indians of this band are pagans, and only three are Christians.

Temperance and Morality.—They are on the whole a temperate and moral people, but occasionally those working in lumber camps indulge in intoxicants.

Whitefish Bay Band.

Reserves.—This band has been allotted the following reserves: 32A, on Whitefish bay; 32B, on Yellow Girl bay, and 32C, on Sabaskung bay. The combined area of these reserves is ten thousand five hundred and ninety-nine acres. These reserves are timbered with tamarack, spruce, poplar and also pine timber.

Tribe.—The members of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last payment was fifty-two consisting of thirteen men, seventeen women and twenty-two children. There were no births and one death.

Health and Sanitation.—The health of these Indians has been fairly good and free from epidemics. With very few exceptions they all have been vaccinated. The sanitary condition of their houses is very fair. I may particularly mention the new house built by Paypamepeeke, which is kept clean and whitewashed inside and out.

Resources and Occupations.—Hunting and fishing are the main resources of these Indians. A little gardening is also done by them. A few of the young men earn fair wages by chopping wood.

Education.—There is no day school on this reserve, but some of the children attend the Rat Portage boarding school.

Religion.—There are forty-one pagans, ten Roman Catholics and one Anglican in this band.

Temperance and Morality.—Many of these Indians unfortunately are fond of liquor and use every means to satisfy their appetite. On the whole they are moral.

Assabaska Band.

Reserves.—This band has the following reserves allotted to it, nine of which have been surveyed, all in the Lake of the Woods, namely, 35A, Nangashing bay; 35B,

Obabeekung bay ; 35C, 35D, Sabaskung bay ; 35E, Little Grassy river ; 35F, Sabaskung bay ; 35G, Big Grassy river ; 35H, Sabaskung bay, and 35J, Lake of the Woods. The combined area of these reserves is twenty-one thousand two hundred and forty-one acres. Most of these reserves are well timbered with merchantable Norway pine, tamarack, spruce, poplar and other kinds, and the soil of some of them is well adapted for cultivation.

Tribe.—The members of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last treaty payment was one hundred and fifty-four, consisting of thirty-eight men, forty-six women and seventy children. There were six births and five deaths.

Health and Sanitation.—The health of these Indians has been fairly good and they were exempt from any epidemic. With few exceptions they were all vaccinated. The sanitary condition of their village has been well looked after and all refuse taken away and burned.

Resources and Occupations.—Hunting and fishing are their principal occupations. A large number of them are employed by the lumber and mining companies in cutting cord-wood. Their gardens are also properly cultivated and attended to.

Buildings and Stock.—Their buildings are kept in a fair state of repair, fairly clean, and the majority comfortable. Some are whitewashed in and out.

The stock is well provided for, and in a fairly good condition, and properly sheltered.

Education.—There is one day school on reserve 35 H, but the attendance is not what it should be, owing to the pronounced aversion of the chief and some of his followers to the education of their children, consequently the teacher has resigned and the school has not been in operation for the last six months.

Religion.—One hundred and fifty members of this band are pagans, only four are Christians.

Temperance and Morality.—Several instances of intoxication have been detected during the year amongst the Indians of this band, and the offenders punished. On the whole, however, there is some improvement in respect to temperance and morality.

Islington Band.

Reserves.—This band has the following reserves allotted to it, namely, Islington, on the Winnipeg river ; Swan Lake, on the lake of that name, and One Man, on One Man lake. The combined area of these reserves is twenty-four thousand eight hundred and ninety-nine acres. The greater part is undulating and wooded with poplar, spruce, jack-pine and other trees. The ground is stony, but grain can be successfully grown. There are several large hay swamps, also timothy.

Tribe.—The members of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last treaty payment was one hundred and sixty-six, consisting of forty-seven men, forty-three women, and seventy-six children. There were six births and six deaths.

Health and Sanitation.—There are several cases of scrofula in this band ; measles were prevalent on Islington reserve last winter, with no fatal results. Otherwise the general health of these Indians has been fairly good. Their dwellings are kept fairly clean, and sanitary instructions properly carried out. With a few exceptions they have all been vaccinated.

Resources and Occupations.—The main occupations of these Indians are hunting, fishing and berry-picking, from which they derive good returns. They also have gardens on each of the reserves, which they attend to fairly well. The lakes abound with several species of good fish and water-fowl, and the woods with moose and deer, which is a means of providing them with abundance.

Buildings and Stock.—Their log dwellings are fairly well built ; although small, they are comfortable and tidy, while a number of them are whitewashed in and out.

Their cattle are in good condition and well sheltered.

Education.—There is one day school in operation on the Islington reserve, under the auspices of the Church of England, with a fairly good attendance.

Religion.—There is a church with a resident catechist on the boundary of the reserve at Islington, where services are held every Sunday. One hundred and fifty-four members of this band are Anglicans, one Roman Catholic, and eleven are pagans.

Temperance and Morality.—I had less trouble with liquor in connection with the Indians of this band during the past year, owing to the fact that they are getting more and more out of the habit of hanging around town, which was their opportunity of getting liquor.

With regard to their morality, they compare favourably with any other class of people of the same number.

General Remarks.

Characteristics and Progress.—Many of these Indians make a good living by their hunt and other industries, and are becoming better off; while others who are lazy and lacking in ambition, eke out a precarious livelihood. Several have well-built houses fairly furnished, and are quite as comfortable and contented in this respect as many white people. As a rule these Indians are a very law-abiding class of people, but not much progress can be expected of them on account of their roaming habits and their entire dependence on their hunt.

SAVANNE AGENCY.

This agency comprises seven bands, as follows:—Lac des Mille Lacs band, Kawawiagamok, Wabigoon, Lac Seul, Wabuskang, Grassy Narrows and Eagle Lake.

Lac des Mille Lacs Band.

Reserves.—The reserves of this band are 22 A1, on Lac des Mille lacs, and 22 A2, on Seine river, with an area of twelve thousand two hundred and twenty-seven acres.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last treaty payment was eighty-two, consisting of thirteen men, sixteen women and fifty-three children. There were five births and no deaths.

Health and Sanitation.—The health of these Indians has been fairly good, there was no epidemic and with few exceptions all have been vaccinated. The sanitary regulations of the department have been carried out.

Resources and Occupations.—Hunting and fishing are their main occupations. They are nearly all away from the reserve in the winter.

Buildings and Stock.—The improvement of their buildings still continues and they are cleaner, whitewashed in and out.

The few cattle in their possession are in good condition and properly sheltered.

Education.—There is no day school in operation on this reserve. The continual roaming about of these Indians is the principal cause that no school-house has been erected yet, although the number of children of age to attend school warrants the same.

Religion.—Eighty-one members of this band are pagans, and one is a Roman Catholic.

Temperance and Morality.—The morality of the band is fairly good. Many of the Indians use intoxicants when they can procure them.

Kawawiagamok Band.

Reserve.—The reserve allotted to this band is situated on the Kawawiagamok lake. It contains an area of five thousand nine hundred and forty-eight acres, the greater part heavily wooded with spruce, tamarack and pine.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last treaty payment was thirty-one, consisting of eight men, nine women, ten boys and four girls. There were two births during the year.

Resources and Occupations.—The Indians of this band depend entirely upon their hunting and fishing for a subsistence. With the exception of the chief, who has a small garden on the reserve, all the Indians roam about the year round.

Religion.—All the members of this band are pagans.

Wabigoon Band.

Reserve.—The reserve of this band is situated on Little Wabigoon lake. It contains an area of twelve thousand eight hundred and seventy-two acres, well timbered with spruce, tamarack and poplar.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last annuity payment was eighty-eight, consisting of twenty-one men, twenty-nine women and thirty-eight children. There were four births and four deaths.

Health and Sanitation.—There were several cases of measles in this band, two of which proved fatal. Otherwise there was no sickness of any serious nature.

Resources and Occupations.—Fishing and hunting for home consumption and barter are the principal occupations of these Indians. Picking berries is also one of their resources, also working in lumber and mining camps. Very little gardening is done by them.

Buildings.—Their log dwellings are fairly well built and the majority are clean and in a tidy condition. Chief Shabaguay's house should be commented upon, it being a comfortable one and a half story high with good flooring and partitions and the roof shingled. This house compares favourably with that of many a white man's.

Education.—The day school on this reserve continues to do good work. The children when on the reserve attend very regularly. A fair number are able to converse in the English language and do their own correspondence.

Religion.—Eighty-three members of this band are pagans and five are Christians, —one Church of Anglican, and four Roman Catholics.

Temperance and Morality.—I regret to say that a great number of this band are addicted to the use of intoxicants, especially when visiting the towns in the neighbourhood of the reserve.

Lac Seul Band.

Reserve.—The reserve of this band is situated on the southeast shore of Lac Seul, or Lonely lake. A fragment of this band known as 'Frenchman's Head' is stationed about fifteen miles south, and there is also another fragment on Sawbill lake, four miles north of Ignace station on the Canadian Pacific railway. The reserve proper has an area of forty-nine thousand acres. The greater portion is thickly wooded with poplar, jack-pine, birch and other species. The soil is sandy and clay loam and fairly good for cultivation. The portion on Canoe river is better adapted for cultivation, interspersed with many ponds, hay sloughs and bluffs of poplar. There are some very good hay-lands throughout this reserve.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The combined population of this band at the last treaty payment was five hundred and eighty, consisting of one hundred and forty-one men, one hundred and twenty-nine women, and three hundred and twelve children. There were twenty births and eleven deaths.

Health and Sanitation.—The health of these Indians has been fairly good; they have, with the exception of a few cases of scrofula and measles, suffered only from minor ailments. With few exceptions all have been vaccinated. All sanitary measures were attended to as far as possible.

Resources and Occupations.—The main occupations of these Indians are trapping, hunting and fishing for home consumption and trade. Some of them are also employed as boatmen by the Hudson's Bay Company. Several also cultivate small gardens of potatoes, turnips and onions.

Buildings and Stock.—Their dwellings are built of logs and covered with bark, with the exception of two which are shingled. They are in a fair condition. A few are more comfortable and tidy. Their cattle are in good condition, properly attended to and well sheltered.

Education.—The three day schools on this reserve have been in operation the full term during the year, with a fair attendance, considering the fact that sometimes the great majority are absent from the reserve, in the pursuit of their hunt, and in consequence the progress made is not as good as it should be. A few children of this reserve are pupils at the St. Paul's industrial school.

Religion.—The great majority of the Indians of this band are Christians: four hundred and twenty-three are members of the Church of England, one hundred and five of the Roman Catholic Church, and fifty-four are pagans. The Anglicans have missions stationed at Lac Seul and Frenchman's Head.

Temperance and Morality.—I am pleased to say that no cases of intemperance on the reserve came to my notice during the year.

The morality of these Indians is fair.

Wabuskang Band.

Reserve.—The reserve of this band is situated on Wabuskang lake. It contains an area of eight thousand and forty-two acres, heavily timbered with jack-pine, poplar, spruce and other species.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last payment was sixty-seven, consisting of fourteen men, eighteen women and thirty-five children. There were five births and six deaths.

Health and Sanitation.—The general health of these Indians has been fairly good; they were exempt from any epidemic. Their dwellings are fairly clean and some are well furnished. The usual spring sanitary measures were properly carried out.

Resources and Occupations.—Hunting and fishing are their main resources. Owing to their situation, the resources of this band are limited. Only a little gardening is being done, but it is always properly attended to.

Buildings.—Their dwellings are kept in a good state of repair, well ventilated and comfortable.

Education.—The day school was reopened in January last with a fair attendance.

Religion.—Forty-one members of this band are Christians of the following denominations: thirty-one Anglicans, ten Roman Catholics; and the remainder, twenty-six, are pagans.

Temperance and Morality.—A few cases have come to my knowledge of Indians of this band obtaining intoxicants while visiting Eagle River station. This being through the medium of half-breeds, it has been impossible to obtain sufficient evidence to prosecute.

The morality of these Indians cannot be favourably reported upon, but otherwise their behaviour is good.

Grassy Narrows Band.

Reserve.—The reserve of this band is situated on English river, and it has an area of ten thousand two hundred and forty-four acres.

Tribe.—These Indians belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last treaty payment was one hundred and fourteen, consisting of thirty-one men, thirty-one women and fifty-two children. There were five births and two deaths.

Health and Sanitation.—The health of these Indians during the past year has been generally good. They have suffered only from minor ailments. Their dwellings are small and not too comfortable, but fairly clean. Sanitary precautions were attended to this spring. With a few exceptions all have been vaccinated.

Resources and Occupations.—Hunting, fishing and berry-picking are their main resources. They have fairly good gardens of potatoes and other vegetables.

Education.—There is no day school in operation on this reserve, the same having been closed for several years.

Religion.—Seventy-five members of this band are Christians, of which nine are of the Church of England and sixty-six are Roman Catholics, the others, thirty-nine, being pagans.

Temperance and Morality.—These Indians with one exception have been temperate so far as my knowledge goes, and few cases of immorality came to my notice.

Eagle Lake Band.

Reserve.—The reserve of this band is situated on the east side of Eagle lake, and contains an area of eight thousand eight hundred and eighty-two acres. There is a fair quantity of good merchantable timber on this reserve, and its soil is good for cultivation.

Tribe.—The Indians of this band belong to the Ojibbewa tribe.

Vital Statistics.—The population of this band at the last treaty payment was seventy-three, consisting of nineteen men, sixteen women and thirty-eight children. There were seven births and two deaths.

Health and Sanitation.—The general health of this band has been fairly good, there was no epidemic, only one serious case was reported and the patient was admitted to the hospital at St. Peters for an operation.

Resources and Occupations.—Hunting, fishing and berry-picking are the main occupations of this band. A good number of them find employment in lumber camps, in the vicinity of the reserve. They have also a number of good gardens planted with potatoes, corn and other vegetables.

Buildings and Stock.—Their dwellings are neat, comfortable and kept in good repair. Most of them are shingled.

Their stock is well provided for, in good condition and properly sheltered.

Education.—The day school is well conducted and has a fair attendance.

Religion.—There are ten Christians in this band, four of whom are members of the Church of England, six are Roman Catholics, and the remainder, sixty-three, are pagans.

Temperance and Morality.—Several members of this band are addicted to the use of liquor and many temptations are put in their way by white men and half-breeds at Eagle River. Their morality, except in a few cases, is fairly good.

General Remarks.

Characteristics and Progress.—In many instances there is evidence of improvement in the condition of the Indians of this agency ; some of them are above the average

in intelligence and compare favourably with Indians who have reserves more adapted for cultivation. They are law-abiding and always ready to listen to good advice. With few exceptions the great majority prefer such employments as are more in line with their accustomed mode of life and also from which they will receive a speedy return to meet their wants. The most deplorable thing in one part of this agency is the continual traffic in liquor with the Indians, more especially at Eagle River, Wabigoon, Dinorvic and Savanne, all stations on the Canadian Pacific railway; as there are so many lumbermen and half breeds wandering through these stations and procuring whisky for them wherever they go.

COUCHICHING AGENCY.

Reserves.—In this agency there are thirteen separate bands named as follows: Hungry Hall, Nos. 1 and 2; Long Sault, Nos. 1 and 2; Manitou Rapids, Nos. 1 and 2; Little Forks, situated on Rainy river; Couchiching, east of Fort Frances; Stangecoming, about eight miles northeast of Fort Frances: Niacatchewenin, at Northwest bay, Rainy lake; Nickickonsemenecanning on Porter inlet, Red Gut bay; Rivière la Seine, at the entrance of the Seine river and on Wild Potato lake; Lac la Croix band, on Lake Neguaquan.

Vital Statistics.—The population at the annuity payments of 1902 was eight hundred and forty-seven, consisting of one hundred and ninety-three men, two hundred and thirty-eight women and four hundred and sixteen children. There were twenty-eight births and forty-four deaths, sixteen Indians joined the agency and six left it, making a total decrease of six.

Tribe.—All the Indians in this agency belong to the Ojibbewa tribe.

Resources and Occupations.—Fishing and hunting are their principal occupations. The reserves along the Rainy river are well adapted for farming and stock-raising; the land is of rich black loam with clay bottom, but only a few of the Indians have made an attempt to clear a certain area of land for cultivation of grain, whereas the majority have only small gardens. These Indians being all good axemen, they can always get employment at lumber camps at good wages. Those living on reserves on Rainy lake spend most of their time in hunting and fishing.

Buildings.—Some have fair houses and are very comfortable, more specially those members residing at Long Sault, Manitou and Couchiching; but the rest of the houses are of a poor class.

Education.—There is a day school on each of the following reserves: Long Sault, Manitou, Little Forks, Couchiching and Stangecoming, where the school was reopened last fall after being closed for several years. The three first are under the auspices of the Church of England; the two others are under the Roman Catholic Church. The progress is very slow owing to the irregular attendance, and the results are rather discouraging; another reason that progress is not shown is that the children leave the school too young, boys and girls are withdrawn at the same age, and I cannot see any way of improving this condition. None of the bands on Rainy lake have day schools established yet.

Religion.—Seven hundred and four of the Indians of this agency are pagans, one hundred and thirteen are Roman Catholics and thirty are Anglicans. The Church Missionary Society has a church with a resident missionary at the Long Sault reserve, and the Roman Catholics at Couchiching, where a church is in course of erection.

Characteristics and Progress.—While the great majority of these Indians are indolent and difficult to incite to labour, yet there is a marked improvement in the circumstances of the several bands whose reserves are on Rainy river and at Couchiching, and a great number of them never lose an opportunity to make money at any work that may turn up. Others have taken advantage of the advent of the new railway in that part of the district to secure work at cutting ties, earning thereby good wages. But yet much remains to be done before asserting that they are thoroughly progressing.

Temperance and Morality.—Both intemperance and immorality, I am sorry to say, are still too prevalent in this agency. Intoxicants are easily procurable and the appe-

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Sarcee Boarding School, near Calgary, Alta.

tite of the Indians in that direction leads them to use every possible means to satisfy the same. As intemperance and immorality usually go hand in hand, one can easily understand why the morality is not of high standard amongst these ignorant people.

The agency office is located at what is commonly known as Pither's point, this being the central point of the agency and within a reasonable distance of all the bands. The buildings are in a good state of repair and the surroundings have been greatly improved. The various records were examined and found to be kept with care, all correspondence is kept on the proper file system, and the agent, Mr. Wright, has been painstaking in the discharge of his duty.

I have, &c.,

L. J. ARTHUR LEVÊQUE,
Inspector of Indian Agencies.

NORTHWEST TERRITORIES,
ASSINIBOIA—ASSINIBOINE AGENCY,
SINTALUTA, August 4, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902, along with a statistical statement and inventory of government property under my charge.

ASSINIBOINE BAND, No. 76.

Reserve.—The reserve is a block of land in extent eight miles by nine, situated south of the Canadian Pacific railway and south of the thriving village of Sintaluta.

Tribe.—The Indians are Stonies, or Assiniboines, and no doubt at some remote time must have been closely allied to the Sioux, as there is a similarity in language and traditions.

Vital Statistics.—The band numbers two hundred and ten, being a decrease of one since last year.

Health and Sanitation.—I think on the whole the health of these Indians is improving, owing to advancement in their manner of living. Last winter an epidemic of small-pox occurred among the settlers adjoining the reserve. No Indians were afflicted with it, a result, I believe, of timely vaccination.

Resources and Occupations.—Hay and wood form the principal natural resources, but the wood has been fairly culled over, and the size of a marketable quality is not plentiful. There is, however, a good growth of young green poplar which will be very useful in a few years.

The Indians raise wheat, oats, barley, potatoes and other roots, and, as last year there was a splendid yield, it has afforded them a very comfortable living, with a surplus of grain and potatoes for sale. They keep cattle, which are steadily increasing, and the surplus for sale brings in quite a revenue to the Indians owning them.

Buildings.—A steady improvement is going on in the matter of houses. The old mud-roofed 'shacks' are giving place to better houses with shingled roofs. The Indians pay for lumber, shingles, &c., from their own money, and do not go into debt over it. When an Indian gets a shingled roof, he is very proud, and feels that he has a home

and does not have to move out of it every rain-storm as Indians in houses with mud roofs have to do.

Stock.—The cattle are doing well and this season the crop of calves was heavy and most satisfactory. Owing to the very wet season, many of the cattle were affected with 'scratches' or 'mud fever.' It pulled them down in condition, but, as the weather got more settled, they have picked up again.

I notice an improvement in the size of the horses the Indians are getting, and intend doing all I can to help them in this matter, as the cayuse is too small for general work.

Characteristics and Progress.—I am glad to say that these Indians are making steady, and, I believe, solid progress towards civilization. There is an ambition among the younger Indians that is most commendable. It is gratifying to find that in no case where an ex-pupil of any school has put in the full course and returned to the reserve has he returned to Indian ways of living. The fact that there are a number of the progressive Indians on the reserve who have adopted white habits accounts in great measure for this, as a pupil returning from school to live on the reserve finds at once that he or she has not to stand alone and it greatly helps to hold them up.

A list of the articles that the Indians now purchase when they have a little money, will show very fairly the progress they are making. It would be too long to give everything, but I will give a few purchased during the year: lumber, shingles, wagons, binder, bedsteads, seeder, heavy harness, cooking stoves, pumps, mowers, horse-rake, besides tools, clothing, &c.

Temperance and Morality.—I am glad to be able to report very favourably of the Indians in these respects.

General Remarks.—The past year was a most favourable one in every respect and the Indians shared in the general prosperity of the country, and I am glad to say the prospects appear at the present time very bright for another bountiful harvest. As they have a heavy crop, the Indians should have still more than last year.

I may say that so encouraged have the Indians been that about two hundred and fifty acres of new land have been broken for next year.

Some improvements are being made around the agency headquarters, the principal of which is the rebuilding of the old storehouse on a good stone foundation. It will be a good substantial building when completed. Daniel Kennedy, who is employed as interpreter, has done most of the carpenter work assisted by the Indians. He has shown considerable ability in taking hold of work of this character and deserves praise for the way the work has been done.

Sioux Band, Moosejaw.

These Indians came over from the United States in 1876-77 with Sitting Bull.

They number about one hundred and twenty, and make a living around Moosejaw, Wood Mountain and Willow Bunch. It would be better for them if they were settled on some reserve. Living as they do, at large, their habits have not improved, and around Moosejaw they got in to the way of getting a good deal of liquor.

Since taking them under supervision, I have had several convictions against persons supplying them, which has had a good effect in checking it. These Indians, although making a living, are not improving and the prospects are not bright for them in this respect unless they become settled on some place of their own.

I have, &c.,

THOS. W. ASPDIN,
Indian Agent.

NORTHWEST TERRITORIES,
BATTLEFORD AGENCY,
BATTLEFORD, August 20, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the affairs of the Battleford agency for the fiscal year ended June 30, last.

This agency comprises seven reserves, situated at distances of from fourteen to forty-four miles from the town of Battleford; the buildings of the agency headquarters are conveniently and centrally located on the Battle river, about two miles south of the town.

RED PHEASANT BAND.

Reserve.—This reserve consists of twenty-four thousand three hundred and twenty acres, and is located twenty-two miles southeast from Battleford in the Eagle hills.

Tribe and Population.—These Indians are Crees, and number thirty-nine men, thirty-seven women, thirty-six boys, and thirty-one girls, making a total of one hundred and forty-three.

Resources and Occupations.—The reserve is adapted for the growing of barley and oats, but owing to its situation, is unsuitable for raising wheat on account of summer frosts.

The soil is very good and water is plentiful, there is also an abundance of hay; the wood, however, is getting to be scarce, on account of being consumed by the prairie fires of recent years.

Live stock is the principal industry of these Indians; they also make a considerable amount of money by trapping musk-rats, freighting and working for settlers.

The crops on this reserve were very good last season.

Stock.—The cattle belonging to this band number four hundred and ten head. These Indians look after their stock well; their animals came through the winter in splendid condition.

Each year sees an improvement in the class of horses owned by these Indians.

Farming Implements.—These people are gradually acquiring a good equipment of wagons, ploughs, mowers and rakes and other farming implements, all of which have been purchased with their own money; in a few years' time I hope to have every man with his own outfit of farming implements.

Education.—There is a day school (Church of England) on this reserve under the charge of Miss Willson. The attendance is the largest in the agency; and both teacher and pupils are thoroughly interested in their work. The school-house is clean and comfortable.

Religion.—The majority of this band belong to the Church of England, the rest are Roman Catholics. Regular services are held in the mission church on this reserve by the Rev. Mr. Inkster.

Characteristics and Progress.—These Indians are industrious and are always willing to work when there is some remuneration in sight. For the last few years they do not seem to have advanced much in civilization; I am glad, however, to say that they now appear to be awakening to the necessity of adopting and following the white man's method of living.

Sweet Grass Band.

Reserve.—This reserve has an area of forty-two thousand five hundred and twenty-eight acres, and is located on the south side of Battle river, twenty miles west of Battleford.

Tribe and Population.—These Indians are Crees. There are twenty-one men, thirty women, nineteen boys and thirteen girls, making a total of eighty-three.

Resources and Occupations.—The land on this reserve is well adapted for raising grain : there is also hay for carrying a good number of stock.

The wheat raised here last year was of excellent quality, and the yield was very good, so that these people have been able to provide themselves with flour.

Stock.—The cattle here are among the best in this district, and are a source both of revenue and food, besides providing occupation to all of the men of the band.

Farming Implements.—Nearly every family on this reserve possesses all the agricultural implements it needs, and the Indians take very good care of them.

Education.—There is a day school on the reserve, but the attendance is very small, as there are very few children.

Religion.—There are still a few pagans among these people, the rest are either Roman Catholics or Anglicans.

Characteristics and Progress.—A good deal of ambition is shown in their efforts to become self supporting and independent ; they are also very steady and industrious.

Poundmaker and Little Pine Bands.

Reserves.—These two reserves, which adjoin each other, are situated on the south side of Battle river, about forty miles west of Battleford. They contain thirty-five thousand two hundred acres.

These two reserves are both well adapted for either grain-growing or stock-raising.

Tribe and Population.—All the people of these bands belong to the Cree nation.

There are fifty-six men, sixty-one women, fifty-three boys, and forty-one girls ; two hundred and eleven in all.

Resources and Occupations.—These reserves are especially adapted for growing grain, and the Indians are trying to take every advantage of this fact ; they nearly all have sufficient flour to carry them well into the winter ; and their crop, this season, gives promise of a very good yield, so that I have every hope that they will not need flour from the department any more.

Stock.—Cattle-raising among these bands is successfully carried on, they also have a number of sheep and pigs, they take almost as much interest and care of their stock as white people do.

There are five hundred and eighty-two head of cattle on these two reserves.

Farming Implements.—The wagons, binders, mowers, rakes, ploughs, harrows, &c., are all well cared for and kept in a good state of repair, so that they are always serviceable when needed. The major portion of these implements have been purchased with the Indians' own money.

Education.—There is a day school on Poundmaker's reserve conducted under the auspices of the Roman Catholic Church ; and also a day school on Little Pine reserve managed by the Church of England.

The attendance at both of these schools is fair ; and the teachers are earnest in their endeavour to impart knowledge to the children.

Religion.—These Indians are followers of the Roman Catholic and Anglican Churches.

Characteristics and Progress.—All these people are industrious workers, and are fairly well off ; they are in a fair way towards earning their own living.

Stony Band.

Reserve.—This reserve is situated fourteen miles south of Battleford, in the Eagle hills. It contains forty-six thousand two hundred and eight acres.

Tribe and Population.—These people are all Stonies. They number seventy-eight souls, viz: twenty-four men, twenty-eight women, sixteen boys, and ten girls.

Resources and Occupations.—This reserve is very suitable for raising cattle, and also for growing oats and barley, but on account of the prevalence of summer frost, it is not at all adapted for wheat-growing. These Indians, however, haul a good deal of hay and fire-wood into town, and so are able to earn something towards providing themselves with food and clothing. I may say that these people are very Indian, both in their habits and nature, which makes it difficult to advance them in civilization. I think, however, that there is a slight improvement in their condition.

Stock.—The cattle here number one hundred and thirty-one head. They were well wintered, and are all in splendid condition.

Some of the young men here have no cattle, and it is my intention to issue some to them on loan, as there are a few head available which have been on loan to other bands, and are now returned to the department.

Farming Implements.—These Indians are well off for wagons, sleighs and mowers. As they do not do much arable farming, they have enough of ploughs and harrows for their present needs.

Education.—There are quite a number of children who are of school age, but there is no day school on this reserve. This defect, however, will soon be remedied, as I understand that one is to be opened here again shortly.

Religion.—The bulk of this band are pagans, but there are a few of them who profess Christianity; they are Roman Catholics and Anglicans.

Moosomin's and Thunderchild's Bands.

Reserves.—Moosomin's reserve is twelve miles to the west of Battleford. It contains fourteen thousand seven hundred and twenty acres.

Thunderchild's reserve adjoins that of Moosomin's and is distant eighteen miles west of Battleford. It comprises fifteen thousand three hundred and sixty acres on the south side of the North Saskatchewan river, and five thousand four hundred and forty acres on the north side of the same.

In addition to these reserves, there is a marsh for both of these bands, of nine hundred and sixty acres, at Round hill, twenty miles northeast of Battleford.

Both of the reserves belonging to these bands are extremely well suited for mixed farming and are also well supplied with small timber.

Tribe and Population.—These Indians are mainly Crees, the other portion being Saulteaux.

In Moosomin's band there are twenty-six men, thirty-one women, twenty-three boys, and twenty-eight girls, making a total of one hundred and eight. Thunderchild's band contains forty-three men, forty-three women, twenty-three boys and twenty-two girls, or a total of one hundred and thirty-one. The combined population of these two bands is two hundred and thirty-nine.

Resources and Occupations.—Mixed farming is carried on by these Indians, with a very fair measure of success; they also make a little extra by the sale of hay, fire-wood, charcoal and lime.

Stock.—The cattle belonging to these bands number four hundred and seventy-four head. They are all in prime condition and came through the winter in splendid condition.

Farming Implements.—These bands have a sufficient number of farming implements for their present requirements, and they take good care of them.

Education.—On Thunderchild's reserve there is a day school, conducted by the Church of England authorities. The attendance is small owing to the small number of children on the reserve.

There is also a boarding school immediately adjoining Thunderchild's reserve. It is under the management of the Roman Catholic Church, and is conducted by the Sisters of the Assumption. Too much praise cannot be given to these reverend sisters for the care, patience and interest that they bestow upon the pupils and their work. The building is a model of cleanliness and comfort, and the children all look happy, contented and intelligent.

At the present time there is a regular attendance of fifteen children from the various reserves of the agency. I shall be glad when the department authorizes a larger number of pupils at the school, as there are more available, and this class of institution certainly gives good value for the money expended upon it, and also has a very beneficial effect on the Indians.

Religion.—Regular services are held in the Church of England day school, and also at the Roman Catholic mission adjoining Thunderchild's reserve. Those Indians who have embraced Christianity attend fairly well at these services.

Characteristics and Progress.—The men of these bands are good workers, but they need constant supervision to keep them in the right path.

I am confident that with good men here in charge for a few years these bands will become entirely self-supporting.

Remarks Applying To The Whole Agency.

Vital Statistics.—The number of Indians paid this year was seven hundred and fifty-four, as against seven hundred and ninety-two last year.

There were thirty-four births and sixty-two deaths during the fiscal year.

Health and Sanitation.—Last winter we had an epidemic of measles, and as it was of a very malignant type it carried off quite a large number of children. Everything that was possible was done to alleviate the sickness, and thus a good many were saved who would otherwise have died. The children of all the employees also caught the disease from the Indians, and they had, in consequence, a very hard time of it; one of them died from this cause.

Although we had small-pox all around us for some two or three months, I am thankful to say that, owing to the precautions taken for its prevention, we escaped.

The health of the adult Indians has been excellent.

Houses were thoroughly whitewashed and premises cleaned up, all garbage being burned.

Stock.—The cattle of this agency are among the finest in the Saskatchewan district. They number nineteen hundred and fifty-two head, which is twelve more than last year's count.

We have already branded three hundred and eighty-two calves this summer, and expect there will be a good many more yet before the season is over.

Of sheep we have a goodly number, but as yet they are not much in an Indian's line of farming. They injure the crops a good deal, and require constant herding on account of coyotes and dogs. I trust, however, that before long they will make fenced pasturages for their sheep.

The majority of these Indians take very kindly to the rearing of pigs. They have plenty of waste grain to feed them on, find a ready sale for the surplus hogs, and provide themselves with quite a lot of pork.

As a rule the class of horses owned by these Indians is very poor, and totally unfit for farm purposes I trust, however, that the stallion we have lately received from the department will, in a short time, ameliorate this condition of affairs.

Characteristics and Progress.—Taken as a whole, I think I am safe in saying that the Indians of this agency are distinctly making an improvement in their condition. They are very industrious and ambitious to become self-sustaining.

Temperance and Morality.—Two or three cases of intoxication have come under my notice. The offenders were immediately punished, and the people who supplied the liquor were also fined and imprisoned.

I find that the greater portion of these Indians are both moral and temperate, *i.e.*, like a good many white people, when temptation is not put in their way.

General Remarks.—Our Indians last season harvested and threshed twenty-four thousand five hundred and twenty-nine bushels of grain. At the grist-mill here, however, they would not grind for us before the latter part of February ; thus, as there was very little market for the wheat, we were placed at a decided disadvantage, which would not have been the case if we had had a grist-mill of our own.

The Indian blacksmith whom we have here at the agency is a great help to the Indians, as he is quite handy at doing repairs.

Last winter we got out quite a number of saw-logs, but the water was too high to get at them this spring, and as the saw-mill belonging to the Carlton agency was required in that agency, we had to return it this summer, so that we shall now have to wait until next spring before it will be at liberty to cut our lumber.

I may state that all the members of the staff have worked loyally and faithfully at their several duties in carrying on the work of the agency.

I have, &c.,

J. P. G. DAY,
Indian Agent.

NORTHWEST SUPERINTENDENCY,
BIRTLE AGENCY,
BIRTLE, September 9, 1902.

The Honourable
The Superintendent General of Indian Affairs
Ottawa.

SIR,—I have the honour to forward my annual report of this agency, together with agricultural and industrial statistics, for the fiscal year ended June 30, 1902.

Headquarters.—The headquarters of this agency are located in the town of Birtle, which is on the northwestern branch of the Canadian Pacific railway. The Birdtail creek runs westerly through the town.

Tribes.—This agency comprises nine reserves, and five are occupied by the Saulteaux and four by the Sioux. The Dakotas, or Sioux, receive no annuity, but were given reserves and assistance in cattle and a few farm implements so as to enable them to make their own living in farming and cattle-raising, which the majority are doing fairly well.

The Saulteaux are a branch of the Ojibbewa tribe, but are now known as the Saulteaux. They receive an annuity of $5 each, and each headman $15, and each chief $25.

BIRDTAIL SIOUX BAND, No. 57.

Reserve.—This reserve has an area of six thousand four hundred acres and is located at the junction of Birdtail creek and the Assiniboine river. The land is a light loam and well adapted for grain-growing and root crops. The land in the valley is suitable for grain-growing, being heavier soil than the upland. The hay supply is secured in the valley along the Assiniboine river and Birdtail creek. During dry

seasons the hay supply is limited, but sufficient is secured along with the wheat and oat straw saved after the harvest to supply their cattle with feed during the winter months.

There are about six hundred acres in wood, mostly scrub, consisting of oak, maple and small poplar. The Assiniboine river borders the south and west, and the Birdtail creek runs through the northwest portion of the reserve

Oak River Sioux Band, No 58.

Reserve.—This reserve has an area of nine thousand seven hundred acres, and is located about six miles north from Griswold, a town situated on the main line of the Canadian Pacific railway. The soil is a mixture of light and heavy loam and is well adapted for the raising of grain and roots of all kinds. On some of the hills the land is stony and sandy and is suitable for pasture. There are about one thousand acres of wood mostly elm, oak and poplar; with the exception of elm the growth is small. The Oak river runs through the northeast corner and empties into the Assiniboine river. The Assiniboine river is the south and east boundary of the reserve.

Oak Lake Sioux Band, No 59.

Reserve.—This reserve has an area of two thousand five hundred acres and is located about four miles north of Pipestone, a small town on a branch of the Canadian Pacific railway. The soil is a sandy loam. There are about one thousand and fifty acres suitable for cultivation; about one hundred and fifty acres in wood, principally ash, elm, maple and poplar, and one thousand and fifty acres suitable for hay. The Pipestone creek flows through the eastern portion of the reserve.

Turtle Mountain Sioux Band, No 60.

Reserve.—This reserve has an area of six hundred and forty acres and is located on the northern base of the Turtle mountain. There are ten acres in wood and the remainder is suitable for cultivation and pasture-land. Deloraine, a small town on a branch of the Canadian Pacific railway, is the nearest town and post office.

Keeseekoowenin's Band, No 61.

Reserve.—This reserve is located on the Little Saskatchewan river and on the southern base of the Riding mountains and has an area of six thousand four hundred and forty acres. The Indians of this reserve have also a fishing station on the northern shores of Clear-water lake about twelve miles northeast of the reserve. The soil is a rich black loam and suitable for raising grain of all kinds and root crops. In the flats along the river there are large hay-meadows irrigated by the Little Saskatchewan river, which runs through the reserve from north to south. The reserve is well adapted for raising stock. There are numerous small lakes and ponds on this reserve. There are one thousand acres in wood, mostly small poplar. Fires have destroyed most of the large timber.

Waywayseecappo's Band, No. 62.

Reserve.—This reserve has an area of twenty-four thousand nine hundred and sixty acres and is located about fifteen miles in a northeasterly direction from the town of Birtle and on the Birdtail creek, which runs through the northeast corner of the reserve. In the southern and western portions there are numerous lakes, ponds and hay-meadows. The soil is a heavy black loam and suitable for raising grain and root crops and an ideal reserve for raising stock.

Valley River Band, No. 62½.

Reserve.—This reserve has an area of eleven thousand six hundred and eighty acres and is located at the junction of the Valley river and Short creek and about twelve miles east of Grand View, a small town on the Canadian Northern railway, which is now being built through the reserve. The soil is a light loam and the pasture good and most suitable for raising stock. There are about two thousand four hundred and sixty acres in wood, mostly poplar and spruce. Fire has done great damage to the timber on this reserve. There is still good timber on the reserve suitable for building purposes, railway ties, &c., also large quantities of fire-wood. There are a number of hay-meadows along the Short creek and sloughs on the reserve, from which the Indians obtain their supply of hay.

Gambler's Band, No. 63.

Reserve.—This reserve has an area of eight hundred and twenty-five acres and is situated on Silver creek, which is on the east side of the Assiniboine river and about five miles southwest from Binscarth, a small town on a branch of the Canadian Pacific railway. The soil is a black loam with poplar bluffs and some scrub oak. The soil is well adapted for raising grain and root crops.

Rolling River Band, No. 67.

Reserve.—This reserve has an area of twelve thousand eight hundred acres and is located about eight miles north of Basswood, a small town on a branch of the Canadian Pacific railway. The reserve is undulating with a great deal of poplar and willow bush burnt in patches. There are numerous lakes (four of which contain fish), ponds and hay-meadows. The soil is a rich black loam suitable for grain-growing. There are four thousand five hundred acres in wood, mostly poplar, which is large enough for building purposes and the remainder only suitable for fire-wood. The Rolling river runs through the eastern portion of the reserve from north to south.

Vital Statistics.—The population of the bands in this agency is as follows: two hundred and twenty-eight men, two hundred and forty-six women and four hundred and twenty-eight children and young people under twenty-one years of age, making a total of nine hundred and two. There were thirty-seven births and thirty-one deaths during the year. There was a decrease of twenty-two in the population during the year accounted for as follows: thirty-eight joined the Keeseekoowenin's, Waywayseecappo's and Rolling River bands. These were absent last annuity payments visiting at other reserves and returned too late to be counted in the census. Sixty-six left the Oak River Sioux, Waywayseecappo's and Valley River bands, the two latter were transfers (six) and sixty from the Oak River Sioux band who had previously left the reserve and had not been taken off the census return. They were supposed to have returned to the United States.

Health and Sanitation.—There have been the usual cases of phthisis and scrofula and one case of paralysis of the feet, Chief John Rattlesnake of the Valley River band, who received thorough attention from the medical officer, Dr. Shortreed. Measles and grippe were prevalent amongst the children of the Oak River Sioux band: three deaths resulted from measles. With these exceptions, the general health of all the bands is good. The sanitary conditions of all the reserves in this agency are very well maintained. The refuse accumulated during the winter months is raked up in the spring and burned, and a great number of the houses are whitewashed inside and out, and all the houses with few exceptions are kept clean and tidy.

Resources and Occupations.—The Sioux bands are principally occupied in farming and raising stock. Last season their farm operations were crowned with great success being the result of better methods in cultivating the soil, seeding, &c. The returns this season will be nearly double the quantity of last year. The Indians also increase their

earnings by the sale of ponies, fish, bead-work, baskets, mats and wild fruits, which they sell to the storekeepers and farmers in the vicinity. The Saulteaux bands make their living by farming, cattle-raising, sale of wood, hay, senega-root, hunting, fishing, baskets, mats, and working for farmers and others in the vicinity of their reserves. More attention is now being paid to farming, the acreage cultivated being increased every year.

Buildings.—Improvements have been made to their houses during the year. Shingled roofs have been put on a number of log houses, good windows and doors put in, also good floors, and a number of frame houses have been erected with an upstairs and kitchen attached. A number of granaries have also been built during the year. A frame stable with hay-lott has also been erected by Itoyetanka of the Oak River Sioux band to accommodate eight horses. On the whole there has been a marked improvement in their houses during the year.

Stock.—The cattle on all the reserves are in first-class condition. Eight thoroughbred young shorthorn bulls have been bought for the different reserves to replace the former ones. The quality of the cattle raised by the Indians compares favourably with those raised by the white farmers, and the grade is being improved every year. The Indians take great care of their animals, and with few exceptions are desirous of increasing their herds. I notice a great improvement in the size of their horses. The Indians now, especially the ones who farm, are most anxious to be the owners of a good-sized farm team. The Keeseekoowenin's band purchased a Shire stallion, a fairly good animal, for breeding purposes. As the Indians go more into farming, there will be a tendency on their part to secure better and larger horses to do the work properly. The past winter was very favourable for stock.

Farming Implements.—There has been a very marked increase in the number of implements purchased by the Indians themselves, notably in binders and gang-ploughs. The different reserves according to the acreage cultivated are now very well equipped with the necessary farm machinery for cultivating the soil. The Oak River Sioux band has a first-class separator and a second-hand eighteen horse-power engine, with which all the threshing necessary on the reserve is done.

Education.—The day school on the Keeseekoowenin's reserve, called the Okanase day school, is fairly well attended during the year. The teacher, Mr. R. C. McPherson, is very painstaking and devoted to his work. The pupils are very bright and exceptionally clean about their persons and are making fair progress with their studies. Children from this agency are also attending the Regina, Elkhorn, Brandon and the Qu'Appelle industrial schools and the Birtle and Pine Creek boarding schools. The Indians are taking more interest in the education of their children, but there are still quite a number who are indifferent and will not send their children to school, preferring that they should be brought up in the same way as themselves.

Religion.—Services, Presbyterian, are held regularly on Sundays on the Birdtail Sioux, Oak Lake Sioux, Keeseekoowenin's, Waywayseecappo's and Rolling River reserves. The attendance at these services, by the three first mentioned bands, is good and the Indians seem to take an interest in the services. On the Waywayseecappo's reserve the attendance is fair, but as yet very little interest is taken in religious matters. There is also a service held occasionally (Roman Catholic) on the Waywayseecappo's reserve. At the Rolling river they are all pagans and so far have shown no desire to be Christians. On the Valley River reserve, Presbyterian, no services are held. On the Oak River Sioux reserve there is a regular Sunday service held in the church every morning, and in the absence of the missionary, services are held by the native lay reader; quite a number attend these services. There is also a Sunday school every Sunday afternoon presided over by the native lay reader. A good work is being accomplished, as quite a number of the young men attend and all seem interested in the work. There are churches on the undermentioned reserves: Birdtail Sioux and Oak Lake Sioux, one each, (Presbyterian), Waywayseecappo's, two, one Presbyterian and one Roman Catholic. The church at Oak River Sioux (Church of England) is off the reserve and at Keeseekoowenin's and Rolling River reserves services (Presbyterian) are held, the former in the school-house and the latter in the mission-house; both are on the reserves. The Ladies Aid of the Birdtail Sioux reserve contributed this year $50 towards the Women's Foreign Mission Fund of the Presbyterian Church.

Characteristics and Progress.—The Indians of this agency with few exceptions are industrious and law-abiding and are much better off now than they were two years ago. The result from the farming operations has been satisfactory. No rations are issued in this agency except in extreme cases of poverty or ill health. I might mention Itoye-tanka of the Oak River Sioux band, who has had a frame stable, 14 x 24, added to the improvements of his farm, with stable room for eight horses and hay-mow to hold four tons of hay. He has now a good frame house with kitchen attached, stable, and good well with pump. He has sold during the year over two hundred dozens of eggs and one hundred and eighty pounds of butter, not counting what the family themselves used at their own table. Caske Hanska is also another progressive Indian of the Oak River Sioux. He has built a small frame house, 14 x 18, and this fall intends to build a large living house, using the present one as a kitchen. All the carpenter work has been done by themselves. This Indian also owns a threshing outfit, a first-class separator and a sixteen horse-power engine. Over nineteen thousand bushels of grain were threshed by this machine, harvest of 1901, the result of the Indians' farming operations on the Oak River Sioux reserve. The returns this present harvest will be double last year. New log houses with shingled roofs have been erected during the year on the Waywayseecappo's, Rolling River and Valley River reserves. Five frame houses have been built, two on the Birdtail and three on the Oak River Sioux reserves. Twelve wells have been dug on the Oak River, and one on the Birdtail Sioux reserves during the year. These wells are located near their houses and were greatly needed, as the water-supply previously was melted snow in winter, and in the summer months was taken from the rivers and sloughs. On the whole there has been marked progress amongst the Indians of this agency during the year, particularly in the farming line. Farmers in the vicinity of most of the reserves, note the improvements the Indians are making the past two years in farming and care of stock. They are also better dressed and tidy in appearance and a credit to themselves and the department.

Temperance and Morality.—The Indians of this agency are not addicted to the use of intoxicants, although occasionally, when visiting the towns in the vicinity of their reserves, liquor is obtained by them. Owing to the number of summer fairs held in the province during the summer months, the inducements held out to the Indians, by some of the towns, to come and hold 'pow-wows' or heathen dances for exhibition purposes to amuse the public, tend to draw the Indians in large numbers to the towns, where on account of the large number of people present, liquor is easily obtainable by them. It is a difficult matter to locate those who give them the liquor and to get sufficient evidence to convict, when located, as the Indians can seldom identify them. Could these dances be prohibited altogether, it would lessen the danger to a great extent.

Crops.—Seeding was late on account of the wet spring. Wheat was generally all sown by the end of May, and oats by the beginning of June. Potatoes and other roots were all in by May 24. There was so much rain in June that the growth of grain and roots was retarded somewhat, but the weather improving, the growth was phenomenal, and should there be no damage from frost, the crop returns in bushels will be much larger than last season. The grain is better headed out, and the wheat heads are larger and well filled. The area under cultivation this year in wheat, oats, potatoes and other roots is greater than last year. Wheat-cutting commenced on August 11 this year, and was general with a few exceptions on the 25th on all the reserves.

General Remarks.—This year closed with the Indians being in very much better circumstances than a year ago, being the result of better methods in farming and good care of stock. The Indians on Rolling River and Waywayseecappo's reserves have made marked progress in farming, and I now have great hopes of their success. This year they have two hundred and twenty acres under cultivation, as against sixty-five acres two years ago.

There was a very successful conference under the auspices of the Young Men's Christian Association of Winnipeg, held on June 26 and 27, on the Birdtail Sioux reserve. Mr. R. C. Horn, Provincial Secretary, Mr. A. T. Tibbetts, International Indian Secretary of the Association, and the Rev. Dr. John P. Williamson, of Greenwood, South Dakota, conducted the conference. The programme consisted of Bible-

readings, lectures, and work on the Y.M.C.A. During certain hours of the day there were athletic sports, football, basketball and Indian hoop games. There was also a magic lantern show every evening by Mr. Horn. There were a large number of Indians present from the different reserves who thoroughly enjoyed themselves, and there is no doubt that these annual meetings, which are specially for the young men, do a great deal of good and tend to their advancement.

The staff consists of the same members as last year, and these are faithful and attentive to their duties.

I have, &c.,

G. H. WHEATLEY,
Indian Agent.

NORTHWEST TERRITORIES,
ALBERTA—BLACKFOOT AGENCY,
GLEICHEN, August 7, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report in connection with the Blackfoot agency, together with an inventory of government property and statistical statement for the fiscal year ended June 30, 1902.

Agency Headquarters.—The agency headquarters were located on the north bank of the Bow river about five miles from the village of Gleichen, but about the close of the fiscal year of 1900-1901 they were taken down, removed and rebuilt at a point where the management of the affairs of the agency could be more conveniently and efficiently carried on. The headquarters are now within five hundred yards of the Gleichen railway station, post and telegraph offices, yet within the boundaries of the reserve. Moreover, the majority of the Indians do all their trading at the village just named, and they find the new site of the headquarters much more convenient than was the old location.

Reserve.—The reserve lies just south of the main line of the Canadian Pacific railway, and about fifty miles easterly from the city of Calgary. The eastern and western limits are thirty-six miles apart, and the southern boundary averages about thirteen miles from the northern boundary on the Canadian Pacific railway. The area, therefore, is about four hundred and seventy square miles.

The Bow river enters the western limit and flows in an easterly direction to near the southeastern corner, and from there on until it merges with the Big Saskatchewan river about eighty miles distant. The Arrow-wood and Crowfoot creeks join the Bow river within the reserve. The latter creek enters on the northern boundary and empties into the Bow near the eastern boundary, while the former flows through the south-western portion. From this it may be seen that the reserve is well watered, a desirable feature for stock-raising. At several points along each side of the Bow river there are prominent and sharp-cut banks, and between these are low-lying valleys, some of which are wooded with willow scrub and poplar of small and medium size, while others are free of timber and afford splendid pasturage for cattle and horses.

On either side of the Bow river, to the north and to the south, is one vast treeless rolling prairie with hills rising here and there to break the monotony, and to the west about seventy-five miles distant, may, on clear days, be seen the Rocky mountains in all their majesty reaching up to the blue sky above and around them.

Tribe.—Traditional lore tells us that the Blackfoot tribe inhabited, in the distant past, the northern portion of the Territories and in a low-lying country where their foot coverings frequently became covered with mud. They were there named 'Sikcitano' which in English means 'Blackfoot.'

The Bloods, Peigans and Blackfeet speak the same language and were probably in days of yore one tribe, but from various causes these three branches of the 'wanderers of the plains' became separated and have been known for the last decade under the three names previously mentioned.

The Blackfeet gloried in war in olden days, and many of the aged members of the band still reiterate, with evident pleasure, the part they played in wars with other tribes in the days of their youth.

Vital Statistics.—The population is nine hundred and forty-two, composed of two hundred and sixty-three men, two hundred and eighty-four women and three hundred and ninety-five children. During the year there were twenty-three births, forty deaths and ten Indians left the band, making a total decrease of twenty-seven,

Health and Sanitation.—Since the writing of my last report the health of the Indians has not been altogether satisfactory, towards the close of last year measles broke out and a great many of the children were afflicted. There were a number of deaths, and while measles may truthfully be assigned as the direct cause, there is in my opinion an indirect reason for many of the fatalities. Scrofula is lurking in the system of nearly every adult member of the band, and when parents are afflicted with this insidious disease, it goes without saying that the constitution of the children is weakened, and if attacked by almost any of the ailments that children are heir to, the results are more likely to be fatal than with children of strong constitutions.

Most of the older members of the band passed through the small-pox scourge of 1879, and it is said that this dread disease decreased the band by several hundred. Those who were not thus immuned of it have been successfully vaccinated within the last three years.

The refuse that collected about the Indians' dwellings during the winter months was raked up and burned, and as the teepees are resorted to and frequently moved during the summer, the sanitary conditions may be considered good for the greater part of each year at least.

There is a well equipped hospital, containing two wards, on this reserve, and it is very well patronized too by the Indians. Dr. Lafferty, of Calgary, is the medical supervisor of the reserve and hospital, though Dr. Rose and two nurses take direct charge of the latter.

Resources and Occupations.—The chief occupations are stock-raising, farming, putting up hay for ranchers, mining and hauling coal, and day labour at various sorts of work

Stock.—There are on this reserve about twenty-five hundred horses of the native, or cayuse type, and some five hundred head are annually sold at prices averaging about $5. Last year and this, five well-bred stallions were placed with this herd of ponies and the Indians own a few more fairly good sires. It is a truism that the Indian and his pony are almost inseparable, and this being a fact, the trial is now being made to improve the quality of their horses and thus lead them to self-support on roads they like to travel. If a success is made of this undertaking, and I foresee no reason why it should not meet with fair success, the Indians will in a few years have a few hundred improved horses to sell yearly. For these they should realize $40 per head as against $5, the average price now gained. This item alone will go a long way towards providing the Indians with the necessaries of life, and should lessen considerably the gratuitous issue of food.

Their cattle are increasing in numbers from natural causes, and recently two hundred and nine head of heifers were supplied and issued to members of the band, on the loan system, *i.e.* Indians who receive heifers under this system agree to return an animal of equal value at the expiration of a stated time, usually five years, retaining for themselves the natural increase as a nucleus towards stock-raising.

Only a few years ago, few members of the band could be induced to take cattle on any condition. One old school Indian argued that it was an inexpedient thing to do, for said, he, 'If we accept cattle from the government, the government will soon see that we can support ourselves and refuse to feed us.' The fact that over three hundred head of heifers have this year and last, been placed on loan with individual Indians, is, in my opinion, abundant evidence that the 'old time' Indians have lost their grip on a good many members of the band. A fair proportion of the band are, I am sure, beginning to realize that the days of a free ration-house are drawing to a close and have concluded that it is expedient for them to prepare for the emergency in various ways, such as having a herd of cattle of their own.

Crops.—Last season over five thousand bushels of oats were threshed and about one-half of that quantity was sold and shipped to the South African market. This season the crop promises to be a fair one too, besides which there is this season, as last, a small acreage under roots, which are a great help in the way of food.

In addition to putting up sufficient hay for their own requirements, the Indians realized last season about $2,000 from work of the same nature for near ranchers. At the present time haying parties are at work for themselves and for ranchers.

The months of May and June were very wet and the work contemplated was considerably hindered in consequence. Some road-making and fencing was done, but on account of the rain not nearly as much as I had hoped for.

Coal Mine.—There are on the reserve, a number of coal seams of various degrees of depth and quality. The best seams are on the southern side of the Bow river and are consequently the most difficult to reach, as the best markets lie along the line of railway, which is on the northern side of the river. In addition to supplying the demands near at hand, there were several carloads shipped into the Calgary market, but owing to improper screening of the coal before loading it on the cars, these shipments proved to be neither profitable nor satisfactory. It is my intention to give this industry my personal supervision in the near future, in the hope that it will furnish the Indians with work at mining and hauling, and enable those so employed to gain a fair recompense at least for their work.

When I assumed charge of this agency, less than two years ago, I thought I could see self-support in the distance and within reach of the able-bodied men and women of the Blackfoot tribe. I have tried to keep this desirable haven in sight, for to my mind nothing withers, and eventually destroys, true manhood, more surely than the gratuitous issue of food to those who have the strength to earn it for themselves. While the haven alluded to has not yet been reached, I am glad to be able to report that it is much nearer than it was at the time previously mentioned, and I foresee no good reason why the remaining distance cannot be traversed.

Buildings.—Not very much improvement has been made in buildings since my last report was written. A few minor improvements in dwellings and stables have been made, but none that demand special mention.

Implements.—The Indians are well supplied with implements. Almost all the heads of families now own a wagon. The number of farm sleighs is increasing, as also are mowers, rakes, team harness and other necessaries for carrying on their work.

Education.—There are now two boarding schools on the reserve, against three when my last report was written. The White Eagle and the Old Sun schools, both of which were under the auspices of the English Church, amalgamated last September. The Old Sun buildings are now used and the White Eagle building is vacant. The expense of operating two schools with less than forty five pupils in both was found to be too great.

The Crowfoot school, under the auspices of the Roman Catholic Church, was recently painted outside. This, together with an enlargement of the garden, adds greatly to the appearance of the school, the latter adding also to its usefulness, as it gives more scope for training the pupils in the useful art of gardening.

Both schools are striving to elevate the children under their charge into a higher sphere of living, and while there may be individual failures, the majority of the pupils will make better men and women for the training given them.

There is still a large number of children of school age on the reserve who have never been inmates of any school. I believe, nevertheless, that the objections raised by many Indians to education are rapidly dying out, and that within a few years all will agree that it is necessary to the welfare of all their children. There are pupils from this agency at both the Calgary and High River industrial schools as well as at the two boarding schools on the reserve.

Religion.—The Roman Catholic and Anglican denominations are represented here. The first named is now erecting a commodious and handsome place of worship, while the latter has a like edifice that would be no discredit to a city. About one-tenth of this band claim allegiance to these branches of the Christian Church, while the remaining nine-tenths cling to the religion of their forefathers.

Temperance and Morality.—I regret that neither the temperance nor morality standard of the Blackfeet is as high as it should be for their well-being. I do not think, however, that it has grown worse in the last twelve months, but both intemperance and immorality are more frequently brought to my notice now. There are those among the band who foresee the collapse of all substantial advancement on any line, with either of these cankers gaining headway. Such individuals, knowing my abhorence for both of these evils, report oftener than before.

I am glad to report that there have been no plural marriages during the past year, in fact a number who had two wives a year ago must now be content with one. Several of the young men won (the losers of some of the women use a stronger term than 'won') the affections of the women referred to and took them to themselves. Child marriage, I am also pleased to report, has largely decreased too during the past year.

General Remarks.—The staff has been decreased by one during the year and a saving, without any hindrance to the work, of about $600 per annum effected thereby. The staff now consists of a clerk, who also attends to the ration-house parts of four days of each week; two farmers, one each at the upper and lower settlements; and an interpreter, an Indian.

It is very gratifying to be able to report that members of the staff are loyal to their duties and are, I am persuaded, trying to advance the Indians both financially and morally, by precept and example. I may remark in passing that the Indians here, and I believe elsewhere too, only accept preceptory advice when they see it exemplified: the former when given alone is spurious from an Indian stand-point.

All branches of the work here have grown considerably in the last year. When I first took charge, the Indians appeared to make periodical visits to the office, under the leadership of a chief, and most of the intercourse took place only with the chiefs, who made known the wants of their followers. The custom has changed: now individuals make known their own wants, and while it increases my work to a great extent, it cannot be gainsaid that the present mode of doing is a long way in advance of the old one. I can now study individual character and note reasons for individual progress or failure, and with the former drop a word of encouragement or prescribe what in my opinion will be a remedy for the latter.

On the whole I have much reason for thankfulness for the progress that has been made and for the future outlook as well. There are, as may be expected, a few who would be cantankerous if they thought they could carry their point, but few, now, question rulings on any point. There are so many who appear to be anxious to improve their circumstances that the work has many interesting and encouraging features, particularly when the progress has been made on a much closer gratuitous issue of food.

I have, &c.,

J. A. MARKLE,
Indian Agent.

NORTHWEST TERRITORIES,
ALBERTA—BLOOD AGENCY,
MACLEOD, August 18, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR.—I have the honour to submit my annual report on this agency together with accompanying statistical statement and inventory of government property in my charge for the year ended June 30, 1902.

Reserve.—The Blood reserve is situated between the Belly and St. Mary's rivers in Southern Alberta. It runs in a southern direction from the junction of these two rivers at Whoop-up, near Lethbridge, to a line fourteen miles north of the international boundary at the Mormon village of Cardston. The Crow's Nest Pass railway runs through our northern end from river to river for a distance of sixteen miles. It is the largest reserve in Canada, and covers an area of five hundred and forty-eight square miles of the finest grazing lands of this cattle-grazing district.

Tribe.—These Indians are a branch of the Blackfoot nation, which comprises the Blackfeet near Calgary, North Peigans near Macleod, and the South Peigans in Montana, U.S.

Vital Statistics.—The population of the reserve at last annuity payment was twelve hundred and fifty-three, viz.: three hundred and six men, four hundred and twenty-seven women and five hundred and twenty young persons, being a decrease of twenty-six from the previous year. The births numbered forty-seven—twenty-four boys and twenty-three girls; while the deaths were sixty—nine men, twelve women and thirty-nine young persons.

Health and Sanitation.—The health of the Indians during the first half of the year was good, but about the end of December an epidemic of measles broke out among the children all over the reserve and spread to nearly every family. Nothing could be done to isolate them, the disease being so prevalent. The Indians have little, if any, idea of nursing or caring for the sick, and although I visited every village and nearly every house on the reserve, and told them what steps to take, still a great many deaths took place for want of proper care. The measles was as a rule followed by bronchitis, and it was this disease that cut off so many children, they having been allowed to run out too soon. The two hospitals are of great service, and the Indians are beginning to take more advantage of them than they did a few years ago. Both institutions are well managed.

The sanitary condition of the reserve has been good, and all refuse is carefully hauled away early in the spring. The Indians are vaccinated by the medical officer every year as far as possible.

Resources and Occupations.—Almost the only occupations for the Indians over and above looking after their cattle and horses, are hay-making and freighting. Situated as the reserve is, near to Macleod, Lethbridge, and Cardston, a good demand is always had for hay in these places, and at fairly remunerative prices, while the larger ranches along the rivers and boundary lines also look to the Indians to put up their supply. Last season we had contracts with the Northwest Mounted Police at Lethbridge, Macleod and Standoff, while we also filled large contracts for the Cochrane Ranche Company, the Renfrew Ranche Company, and the Brown Ranche Company. In all some three thousand four hundred and fifty-one tons were put up, including of course the supply for our own stock. A considerable amount of freighting was as usual done during the fall and early winter months.

MATRON AND GIRL PUPILS, SARCEE BOARDING SCHOOL, NEAR CALGARY, ALTA.

Buildings.—A great improvement has taken place during the past few years in the appearance of the Indians' buildings. Old houses have been turned into stables, and new log houses built in their place, which usually have shingled roofs and large windows. One man has built a good frame house, and another one is being erected. The last mentioned is 24 x 24 with cottage roof, and will be a neat and comfortable house.

Stock.—Cattle-breeding is now our most important industry, and the Indians, as a rule, take good care of them. They now have three thousand head of first-class grade cattle. This summer we have already branded five hundred and seventy-seven calves. Nothing but pure-bred pedigreed bulls are in use in our herds. When it is remembered that previously to 1894 not a hoof of cattle was owned by an Indian of this reserve, I think it will be readily admitted that the Indians have done well with their stock. The beef steers and dry fat cows were killed during the months of October, November and December. Ninety-nine steers and fifteen cows were killed, which netted the Indians $6,234.

During the past season a very strong demand for Indian ponies has sprung up, and the Indians, upon my advice, have sold a very large number. The price has improved a little, and the Indians from this source alone have received over $8,000. They still own large herds, and we can well afford to go on selling for a year or two more.

The department was good enough to send two stallions for the purpose of improving the size and breed of the Indian ponies, and I am pleased to say they have been taken advantage of by a large number of the Indians, and I hope in a few years, with breeding and weeding out, to have a good herd of horses on the reserve.

Farming Implements.—This year we have again purchased twenty new wagons and fifteen sets of harness out of our grazing rents. These have been given to fresh workers or men who have taken cattle for the first time. The Indians are now fairly well supplied. Better care is now being taken of their wagons, harness and implements.

Education.—There are three schools upon the reserve—one boarding school under control of the Roman Catholic Church, with a resident population of nineteen—one boarding school under the Anglican Church, with a resident population of over fifty—and one Anglican day school, with an average attendance of about eight pupils. The parents, however, take little interest in educational affairs, and consequently pupils are hard to get. The pupils in the boarding schools are making good progress.

Characteristics and Progress.—The material condition of these Indians shows a fair degree of progress. Their earnings have been increasing from year to year and upon the whole these have been fairly well spent. Some one hundred and seventy-six individual Indians are now cattle-owners, and almost every one of these owns a wagon and harness, while over forty mowers are held by them. All these wagons, harness and mowers have been bought out of their earnings during the last seven or eight years. The amount of real and personal property has also steadily increased, which is one of the best signs of progress. It might be mentioned as an example of the progress made that, although it is only eight years since we began to receive cattle, no less than thirty individual Indians each own over thirty head of cattle, twelve men each own fifty head and over, while two Indians each have one hundred head and over.

Temperance and Morality.—The Indians of this agency, I am afraid, can neither be styled temperate nor moral, although I do not think they are any worse than neighbouring tribes. The ease with which intoxicants can be procured in the adjoining villages and towns is a great drawback, and being fairly well supplied with money, it is little wonder considering their early associations with the white men of that day, that they are addicted to the use of intoxicants.

General Remarks.—The visit of Their Royal Highnesses the Prince and Princess of Wales to Calgary in September last was a great event among the Indians, and a large number journeyed there to see them. The chiefs were delighted at having been allowed to swear allegiance to their new king through his son, and the visit will be long spoken of as the event of a lifetime.

The sun dance was again held on the reserve, the Indians camping away from their homes for a period of over five weeks. Work of all kinds ceased during this period, and they devoted their time exclusively to dancing and other such ceremonies.

Considerable changes have taken place in the staff during the year. Mr. Black, the clerk, resigned in February, and was succeeded by Mr. Fleetham, who has had a good deal of experience on various reserves; Farmers Clarke, Grant and Long have been replaced by Messrs. Damon, McDonald and Webb; while Issuer Freeman has been succeeded by Mr. Fred. Rhodes.

I have, &c.,

JAS. WILSON,
Indian Agent.

NORTHWEST TERRITORIES,
SASKATCHEWAN—CARLTON AGENCY,
MISTAWASIS, August 21, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the annual report on this agency for the year ended June 30, 1902.

Carlton agency lies between the 104th and 108th degrees of longitude. It is bounded on the north by the northern boundary of the district of Saskatchewan and on the south by the North Saskatchewan river, and comprises the following reserves and bands of Indians:—

STURGEON LAKE BAND, No. 101.

Reserve.—This reserve lies to the north of and twenty-five miles distant from the town of Prince Albert. It is about eight and a half miles long, and contains upwards of twenty-two thousand and sixteen acres. Its northern portion is heavily timbered with spruce and poplar, while the southern part of the reserve is available for agricultural purposes. It is traversed for its entire length by the Sturgeon lake, which provides a large quantity of excellent fish.

Tribe.—These Indians are Crees.

Vital Statistics.—The population consists of thirty-five men, forty-three women and sixty-seven children, making a total of one hundred and forty-five. There were six births and seven deaths, causing a decrease of one during the year.

Health and Sanitation.—The health of these Indians is generally good.

Resources and Occupations.—The members of this band depend to some extent on hunting and fishing for a living, some find profitable employment in the lumber camps, while a small number engage in farming.

Buildings.—A number of these Indians have good houses, while others are still content with flat-roofed shanties.

Stock.—The stock consists of one hundred and seventy-five head of cattle, all in excellent condition, and the band will be able to dispose of a number of three-year-old steers this fall. They also own quite a few horses.

Education.—I do not think education has received the attention its importance calls for; there is a school, but the attendance has been slim. A more central site, with judicious pressure on the parents, would, I feel sure, produce much better results.

Religion.—Those members of the band who are not avowed pagans, are attached to the Church of England, which holds occasional services on the reserve.

Progress.—They have not progressed as favourably as they might have done, considering the assistance they have received ; still they are moving on.

Temperance and Morality.—No charge of intemperance or immorality against any member of the band has come to my notice since entering upon my duties here.

Petaquakey's Band, No. 102.

Reserve.—This reserve has an area of forty-two square miles and is situated twenty miles northwest of Carlton ; the soil is generally rich and the locality suitable for mixed farming ; it contains wood in fair quantity, hay and water in abundance.

Tribe.—These Indians belong to the Cree nation.

Vital Statistics.—The population comprises eighteen men, twenty-three women and forty-four children, making a total of eighty-five. The births numbered five and the deaths five, three having joined and one has left the band, making in all an increase of two during the year.

Health and Sanitation.—The health of this band has been fairly good notwithstanding some cases of scrofula, and an epidemic of measles. Many of the houses are scrupulously clean.

Resources and Occupations.—Farming and cattle-raising constitute the chief occupations of this band, though they also engage in hunting, digging roots, &c., and avail themselves of such opportunities of freighting as offer.

Buildings.—With few exceptions the houses are substantial, neat and comfortable. The outbuildings also are well built.

Stock.—The cattle on this reserve are in excellent condition and are evidently well cared for.

Farming Implements.—These Indians are generally well equipped with implements.

Education.—This reserve has no day school, the children being sent to the Duck Lake boarding school at an early age.

Religion.—The Indians here are all Roman Catholics and have a church on the reserve, the zealous and courteous Father Cochin being the resident priest.

Characteristics and Progress.—The majority of these Indians are industrious, and are progressing favourably.

Temperance and Morality.—The members of this band are on the whole temperate and moral.

Mistawasis Band, No. 103.

Reserve.—This reserve is situated on the Green Lake trail, twenty-five miles north of Carlton, and has an area of seventy-seven square miles. The northwestern portion of this reserve is well wooded, while the southeastern part is a bushy prairie, interspersed with bluffs of poplar and willow, the high lands are generally sandy, though well suited to farming. The reserve is well watered, hay plentiful and pasture magnificent.

Tribe.—The Indians of this band belong to the Cree tribe.

Vital Statistics.—The population is one hundred and twenty-seven, consisting of thirty-three men, thirty-eight women, and fifty-six children, there have been ten deaths and four births, two have left and ten have joind the band during the year, making an increase of two.

Health and Sanitation.—The general health of the band has been fairly good, though an epidemic of measles broke out among the children in the spring, Dr. Tyerman providing the necessary medical attention. The sanitary regulations have been carried out when possible.

Resources and Occupations.—Mixed farming is followed by most of the Indians, supplemented by freighting, root-digging &c.

Buildings.—The buildings on this reserve are well built with shingle roofs, planed floors and all in good repair.

Stock.—The cattle, of which there are quite a number, wintered well with few losses, and are now in splendid condition.

Implements.—The Indians have sufficient implements for their present requirements.

Education.—There is a day school on the reserve under the management of a most excellent teacher, who attracts a very fair attendance, considering that a number of the children are absent at boarding and industrial schools; the pupils are making good progress.

Religion.—The most of the Indians on this reserve belong to the Presbyterian Church, and are much attached to the missionary in charge, Rev. W. S. Moore, who preaches faithfully and with no uncertain sound. Services are conducted in Cree and English. The attendance is good.

Characteristics and Progress.—These Indians have not done so well as they might, but are advancing. They have about two hundred acres under crop, principally wheat, there are a few ne'er-do-weals as in all communities.

Temperance and Morality.—Since taking charge of this band I have not heard of any case of intemperance or immorality.

Ahtahkakoop's Band, No. 104.

Reserve.—The reserve of this band lies eighteen miles north of Mistawasis and contains an area of sixty-seven square miles. Along the valley of the Assissippi river, which flows southeasterly across the reserve, a considerable variety of soil may be found, a heavy loam on the flats, with extensive meadow-lands, and a light sandy soil on the ridges, the surface generally is much broken. The northeastern, and south-western portions are heavily wooded, while the more arable portions of the reserve are profitably cultivated in favourable seasons.

Tribe.—These Indians form a part of the Cree nation.

Vital Statistics.—The population is composed of forty-three men, fifty-two women, one hundred and thirteen children, making a total of two hundred and eight. The births have been twelve, the deaths thirteen, and six have joined the band, making an increase of five.

Health and Sanitation.—An epidemic of measles swept over this band in the spring and carried off some children and adults. An effective quarantine was maintained by Sergeant Keenan of the Northwest Mounted Police, and the disease was prevented from spreading to the northerly reserves. Sanitary precautions were enforced.

Resources and Occupations.—With the most industrious Indians of this band, cattle raising is a successful industry, though successive wet seasons have recently made hay difficult to secure; this is balanced to some extent, however, by the better crop on sandy locations, which the same conditions produce. Some of these Indians also have gardens which would be a credit to a white settlement.

Buildings.—The Indian dwellings on this reserve are very creditable, most of them have one and a half stories with shingled roofs. I consider them the best of the whole agency.

Stock.—The cattle on this reserve were well cared for last winter as shown by their fine condition and number to-day over two hundred and sixty head; the Indians also own a number of horses.

Implements.—A fair supply of implements are in the hands of the Indians, many of them their own property.

Education.—The day school on this reserve has been efficiently conducted by a lady teacher during the past year, and considering the drafts on the children of school age by the boarding and industrial schools, the attendance has been very fair.

Religion.—The majority of this band are members of the Church of England and attend the services of the church with a most commendable regularity. The clergyman in charge, the Rev. D. D. McDonald, is deservedly popular, and gives his discourses entirely in the Cree language, of which he has a thorough mastery.

Characteristics and Progress.—These Indians are some of them markedly industrious, many of these being the best of the whole agency. The chief, Kahmeeoostatin, deserves particular mention, being both by personal example and influence an active supporter of the government's efforts to make his people independent and self-supporting; he is an ideal chief and those who follow his guidance are prospering in spite of adverse circumstances.

Temperance and Morality.—The majority of this band rank above the average in temperance and morality.

Kopwayawakenum's Band, No. 105.

Reserve.—The reserve of this band is situated on the northern shore of Meadow lake about one hundred and eight miles north of Battleford and has an area of fourteen square miles. The Meadow river flows through the eastern portion of the reserve, which as a whole contains excellent soil, plenty of timber, good water, and possesses in its waters an exceptional abundance of fish.

Tribe.—These Indians are Crees.

Vital Statistics.—This band numbers seventy-six, consisting of seventeen men, twenty-five women and thirty-four children; there were four births, five deaths, and five joined the band.

Health and Sanitation.—The health of these Indians is good, though the extent of their sanitary measures is limited to the guidance of their instincts in the frequent shifting of their tents during the summer season.

Resources and Occupations.—Their efforts in the direction of farming are limited to the cultivation of a few garden plots; they find in trapping, fishing and the pursuit of larger game almost their sole support.

Buildings.—There are few buildings on the reserve and only two generally occupied, as these Indians leave the reserve during the hunting season of the year.

Stock.—The stock is limited to less than a dozen head of cattle and twenty-nine ponies.

Implements.—Their farming implements are limited in number, but sufficient for their needs.

Education.—The day school on this reserve continues in operation, but the attendance is not very good and progress slow.

Religion.—The majority of this band are Roman Catholics, their spiritual interests being under the control of Rev. Father Teston, of Green lake, who pays them regular visits and whose zeal has been awarded during the past year by notable conversions from the pagan portion of the band.

Characteristics and Progress.—These Indians have several good gardens on the reserve, but they are expert hunters and trappers, and find more pleasure and profit in their favourite occupation than in attempting to farm. They are industrious and law-abiding and are clean and neat in their personal appearance.

Temperance and Morality.—The Indians of this band are temperate and moral.

Kenemotayoo's Band, No. 118.

Reserve.—This reserve is located along the Green lake trail and the Big river, and lies twelve miles north of Sandy lake. Its area is forty-six and one-third square miles, of which nearly five square miles is under water, a chain of lakes running through its entire length. The soil is sandy, the natural pasturage good, and wood is in fair quantity, the

meadows produce thousands of tons of good hay in dry seasons, but at present are largely under water ; fish of good quality are found in its lakes.

Tribe.—These Indians are Wood Crees and almost pure.

Vital Statistics.—The population is composed of twenty-two men, twenty-five women and fifty-six children, making a total of one hundred and three ; during the year there were four deaths and six births, one joined and three left the band.

Health and Sanitation.—Excepting one or two cases of scrofula, the health of this band has been good.

Resources and Occupations.—They are slowly increasing their acreage under crop, but have met with greater success in cattle-raising. Their chief source of support, however, is and will continue to be hunting and fishing, for which their location is well suited.

Buildings.—They have lately erected several buildings of a better class and more comfortable than those previously inhabited.

Stock.—Their stock is small, numbering only forty-eight head, but they were well wintered, are in fine order, and the proportion of calves is greater than in any other herd in the agency.

Implements.—They have sufficient for their present requirements.

Education.—The day school on this reserve was not as well attended during the past year as it should have been. I have every reason to expect that in future it will improve.

Religion.—About one-fourth of this band are pagans, one-fourth are Roman Catholics, and the remaining half belong to the Church of England. The Sandy Lake missionary conducts services at regular times, the school teacher—himself an educated Indian—officiating as lay reader.

Characteristics and Progress.—These Indians are generally indolent, but a few are good workers. Poor success has so far attended their farming operations, but the prospect this season seems brighter, as they are cultivating a part of the Sandy Lake reserve, which is better adapted than their own for this purpose. The women and girls living near the farmer's dwelling were taught knitting by the instructor's wife, and showed a surprising aptitude for the art: they did excellent work with very little instruction, and displayed commendable industry in working up all the yarn they could procure.

Temperance and Morality.—These Indians are temperate and fairly moral.

Pelican Lake Indians.

These Indians are a branch of the last mentioned band, are under the same chief and headmen, share in the ownership of the reserve and draw their share of ammunition and supplies for their destitute along with them, but they live apart at Pelican lake and are given a separate page in the pay-sheets.

Vital Statistics.—They number in all fifty-six persons, of whom ten are men, sixteen are women and thirty children ; there were two births and two joined the band.

Religion.—These Indians are nearly all pagans.

Education.—They are opposed to the education of their children through the fear that they will learn to despise the religion of their fathers.

Resources and Occupations.—Their sole dependence is on the products of the net, and the chase.

Reserve No. 106 A.

Reserve.—This reserve is situated north and east of the Sturgeon Lake reserve, their boundaries being one mile apart. Its area is fifty-six and one half square miles and its surface undulating with a dense growth in parts of timber suitable for building and sawing purposes, and some open country along the banks of the Little Red river which traverses it from the northwest to the southeast.

The soil is a clay loam capable of raising heavy crops, but too rich to mature wheat in short seasons. This reserve is intended for the use of any Indians of the Montreal Lake or Lac la Ronge bands who may desire to settle down and attempt the cultivation of the soil; but so far only a few families, numbering in all about sixteen souls, have availed themselves of the opportunity; they cultivate gardens, and have a small herd of about twenty-seven head of cattle, but their chief sources of maintenance are fishing, hunting and root-digging, with the sale of hay to adjacent lumber camps and work in the same.

Waiispaton's Band (Sioux) No. 94 A.

Reserve.—The reserve contains two thousand four hundred acres and is nine miles northwest of Prince Albert, the soil is light and sandy and about three-fourths of the reserve is covered with brush, scrub, jack-pine and poplar.

Tribe.—These Indians are Sioux.

Vital Statistics.—This band numbers about one hundred souls, but as only seven families dwell on the reserve, the remainder living near Prince Albert, exact details are not available.

Health and Sanitation.—These Indians seem very liable to scrofulous affections, and to diseases of the eye, few of the young live to maturity.

Resources and Occupations.—These Indians have about two acres in gardens and about twenty-five acres under grain. They own twenty-two head of cattle, but obtain their support chiefly from the sale of roots, berries, wood and hay to the convenient market of Prince Albert.

Buildings.—Their buildings are substantial, comfortable, and neatly kept.

Stock.—Their stock of cattle and ponies though small is well tended and the animals are in fine condition.

Implements.—They have a small supply and are very careful of them.

Education.—There is a day school on the reserve under the control of Miss Baker, the missionary, who is an experienced and successfuld teacher. The pupils are more than usually bright and intelligent.

Religion.—These Indians are adherents of the Presbyterian Church, and divine services are held every Sunday in their own tongue by the missionary.

Characteristics and Progress.—They are very industrious and are steadily advancing.

Temperance and Morality.—In these respects, compared with other bands they are most exemplary.

William Charles' Band.

These Indians live in the neighbourhood of Montreal lake and number one hundred and forty-nine: twenty-eight are men, thirty-seven are women and eighty-four are under twenty-one years of age. The adults are all communicants of the Church of England, which has a fine building at Stanley mission with regular services conducted by an earnest native missionary, and also controls a well managed day school. They live almost entirely by hunting and fishing.

James Roberts' Band.

The Indians composing this band live at Lac la Ronge. They number four hundred and seventy-six, consisting of seventy-nine men, ninety-nine women, and two hundred and ninety-eight young people under twenty-one years of age. They are devout worshippers, and adhere chiefly to the Anglican religion, the remainder belonging to the Roman Catholic Church, there are no pagans amongst them. Their sole support is hunting and fishing; fur, game and fish being generally very plentiful.

PETER BALLENDINE'S BAND.

This band inhabits the neighbourhood of the Pelican Narrows, it numbers three hundred and seventy-six members, who are divided as follows seventy : men, eighty-three women, and two hundred and twenty-three children and young people under twenty-one years of age, of these two-thirds are Roman Catholics and one-third belong to the Church of England. Their lives are consistent with their beliefs.

They subsist entirely by hunting and fishing and are conspicuously moral and temperate.

GENERAL REMARKS.

The agency office and headquarters are located at Mistawasis, which was central to the working reserves at the time the buildings were erected.

Cattle.—The past winter having been unusually mild, the cattle came through in fine order and are now in excellent condition all over the agency.

Crops.—As the most of the wheat-land was ploughed last fall, the seed was in the ground much earlier than usual, but the season so far has been unfavourable, and growth slow through excessive rain : however, a larger acreage is under crop, and we hope for good returns in the fall.

Grist Mill.—The operations of the grist-mill during the season produced thirteen hundred and eighty-eight sacks of flour, of which nine hundred and thirty-six were for individual Indians.

Saw and Shingle Mill.—The saw-mill previously loaned to the Battleford agency had not been returned at the close of the year ; the shingle-mill, however, was in operation at Petaquakey's reserve and cut seven hundred and eight bunches of shingles for Indians and eighty-one bunches for outsiders, on which a profitable toll was exacted.

In conclusion, the Indians here have been generally law-abiding, and considerate of the government's wishes, and I would venture the opinion that with ordinarily favourable seasons this agency will continue to progress.

I have, &c.,

J. MACARTHUR,
Indian Agent.

NORTHWEST TERRITORIES,
EASTERN ASSINIBOIA—CROOKED LAKE AGENCY,
Near BROADVIEW, August 12, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report with agricultural and industrial statistics, together with inventory of government property under my charge up to June 30, 1902.

Agency Office.—The agency buildings are situated on the northeast quarter of section 4, township 18, range 5, west of the 2nd meridian, about nine miles northwest of the town of Broadview, on the main line of the Canadian Pacific railway.

Reserves.—The reserves are as follows : Ochapowace's, No. 71 ; Kahkewistahaw's, No. 72 and 72A ; Cowessess, No. 73 ; and Sakimay's and Sheesheep's, No. 74 and 74A ; all lying north of the Canadian Pacific railway and extending from Whitewood on the

east, passing Broadview and running west nearly as far as Grenfell, bounded on the north by the Qu'Appelle river from below Round lake on the east to a short distance above Crooked lake on the west.

There is also belonging to this agency, Little Bone's reserve, No. 73A, situated at Leech lake about forty miles north from this agency.

The total area of these reserves is one hundred and eighty-one thousand six hundred and seventy-six acres.

Ochapowace's Band, No. 71.

Reserve.—This reserve is on the eastern side of the agency and lies northwest of Whitewood, running from a short distance from the railway to the Qu'Appelle valley. It contains fifty-two thousand eight hundred and sixty-four acres. The southern portion is prairie with many hay swamps and bluffs of poplar and willow. The northern portion sloping to the Qu'Appelle river is thickly wooded with poplar and balm of Gilead, and is much broken by large ravines, which are all thickly wooded. The soil is very gravelly, being unfit for cultivation; on the southern portion of this reserve, the soil is a sandy and clay loam with gravelly spots here and there.

Tribe.—The Indians of this band are Crees.

Vital Statistics.—There are on this reserve, thirty-one men, thirty-eight women, and forty-one children, making a total of one hundred and ten. There were no deaths, there were three births and one woman left the reserve, married to a non-treaty man.

Health and Sanitation.—The general health of the Indians has been good with the exception of a small outbreak of measles. Dr. Bird had the children that had it in Round Lake school isolated, and it did not spread. There are some cases of consumption on this reserve, and also some cases of scrofula. Extra care is taken to have all refuse burnt up.

The Indians move into tents during the summer, which is very beneficial to their health. Lime in whitewashing should also be used more freely. The children were vaccinated.

Resources and Occupations.—The Indians on this reserve depend a great deal on their hay and wood, for which there is a good market in Whitewood. It is a good reserve for cattle also, but in proportion to the number of Indians there is a large percentage of old people and widows, which is a drawback to building operations and putting up the amount of hay required for any increase of stock, they not being able to buy the necessary machinery or to hire assistance. They gather large quantities of senega-root, catch quantities of fish in Round lake; also sell berries, tan hides, and in all make a fair living.

Buildings.—They have, considering the number of able-bodied Indians, done extra well in replacing most of the old stables with the logs taken out the previous winter. They have also rebuilt several dwelling-houses. These are not large, but comfortable.

Stock.—The cattle have recovered from the previous hard winter, and are in fine condition. This is a splendid reserve for cattle, but a large number of the Indians are too aged to look after them properly during the long winter.

Farming Implements.—These Indians have a sufficient number of mowers and other farming implements, which are kept in good repair and replaced by themselves when worn out.

Education.—Nine of the children are attending Round Lake boarding school, five are at the Cowessess boarding school, and four are at the Qu'Appelle industrial school.

The parents seem very anxious that the children should receive a good education, although at times it is of great inconvenience to them, as they require their assistance in their work. Usually the children are allowed to go home during haying and harvesting. Living so close to the Round Lake boarding school, most of the children do not have far to go home.

The Rev. Mr. McKay takes great interest in doing anything possible to improve the young, and is much liked by them all. The school is very comfortable and homelike.

Religion.—The Indians on this reserve that profess religion are mostly of the Presbyterian faith. The Rev. Mr. McKay visits them frequently and does his utmost to instruct them. He is ably assisted by Jacob Bear, a native missionary. There are also a few Roman Catholics on this reserve. More progress is made with the younger Indians, the older ones remaining steadfast to their old faith.

Characteristics and Progress.—There has been a great improvement during this last year. Having good crops last year has been of great help, enabling the Indians to purchase new mowers, also a new binder. They have also, in nearly every case, built new stables to replace the old ones; a few of the houses have also been rebuilt.

Three young men that have not farmed before have broken up land for next year.

Pierre Belanger and Kassooquawenum are two of the best workers. Little Assiniboine, having lost his wife, was in mourning, and did not do as well as usual, but he has commenced again.

Taken altogether, considering there are so many aged people on this reserve, they have made good progress.

Temperance and Morality.—There have been brought before me a few cases of intemperance, for which the Indians were fined and in each case the person that supplied the liquor was more severely punished. In proportion to the number of Indians visiting Whitewood with hay, wood and grain for sale, the number of cases were very few. I think there will be still less in the future, as they have not escaped punishment in any case.

In reference to their morality, I have nothing to report against them, and believe them to be good in that respect.

Kahkewistahaw's Band, No. 72.

Reserve.—This reserve joins that of Ochapowace's on the west side, and lies north of Broadview, on the Canadian Pacific railway; the Qu'Appelle valley is its northern boundary. There is also a small fishing station belonging to this reserve (No. 72A) at the eastern end of Crooked lake, about ten miles distant.

The reserves contain an area of forty-six thousand eight hundred and sixteen acres. The land is mostly undulating prairie of a fair quality, interspersed with many ponds and hay sloughs with bluffs of poplar. There are some very good hay-lands in the southern part.

Tribe.—The Indians of this band are Crees.

Vital Statistics.—The population of this band consists of twenty-nine men, thirty-five women, and forty-three children, making a total of one hundred and seven.

There were two births and two deaths, six Indians left the limits of the reserve, two women joined by marriage, one from Cowessess reserve and one from Pasquah's reserve, also one returned who had been absent.

Health and Sanitation.—On this reserve the health of the Indians generally has been good, there were no epidemics of any kind. The wife of the old chief died of consumption, also another of the same disease. The usual precautions were carried out in burning refuse and having the children vaccinated. More lime will be furnished to them this year for whitewashing their houses. Dr. Bird looks after any requiring his help.

Resources and Occupations.—The Indians on this reserve have gone in more largely for farming than in past years. They have good land for farming, and hay, but wood is scarce. They sell considerable hay at Whitewood and Broadview; also senega-root and berries are sold by the older people. They also fish in the lakes, shoot numbers of ducks and prairie chickens, which are very plentiful in the fall. Thus they live fairly comfortably.

Buildings.—They have in most cases replaced the old stables by new ones, and now the stables on the reserve with very few exceptions are very comfortable for cattle.

Two large dwelling-houses have been erected, and several smaller ones rebuilt, all of which is a great improvement over last year.

Stock.—The cattle this year are in very fine condition, they having had plenty of hay and straw last winter, a quantity of which is left for next year. One thorough-bred bull was given this band for improvement of their stock, and is much appreciated.

Farming Implements.—On account of the increased acreage this year, it was necessary for the Indians to purchase a few more implements such as disc harrows, ploughs, seeders, and to replace those worn out, which they have done from their own money.

Education.—Thirteen of the children are at the Round Lake boarding school, two are at Cowessess boarding school, and seven are attending the Qu'Appelle industrial school.

The Indians are anxious to have the children at school, and send them as soon as they are of proper age. They do not mind their being at school when they are young, but in most cases want them home to assist at haying and harvesting. They also wish them to be discharged when they are eighteen years of age. In many cases the parents are getting too old to do much work.

Religion.—On this reserve there is a very neat Presbyterian church, which is well attended by the converts; but the larger number, being old and pagans, do not attend regularly.

Services are held every Sunday by the Rev. Mr. McKay or Jacob Bear.

There are also some Roman Catholics on this reserve, who attend church at the Roman Catholic mission in the valley.

Characteristics and Progress.—For the most part, these Indians are of a good class, they are willing to work and have made good progress during the year. They had good crops last year, and this year have put in a larger acreage.

Louison, one of the headmen, Arthur Wahsacase and Mesahcamapeness have put in nearly fifty acres of new land and fenced it with wire, between the agency and Broadview. Alex. also has a good crop. They have also built new houses and stables.

This place would be a good spot for ex-pupils to farm, as they would be away from the older Indians, who are not very progressive as a rule.

Temperance and Morality.—There has been only one complaint made against any in this band during the year for intemperance. There were two cases of immorality, but they were settled satisfactorily and will not, I think, occur again.

Sagit-assewenin, who shot his mother-in-law when under the influence of liquor, and was reported last year as having gone to the United States, has been arrested and is now awaiting his trial here.

Cowessess' Band, No. 73.

Reserve.—This reserve is also situated between the line of the Canadian Pacific railway on the south and the Qu'Appelle valley on the north, and is west of Kahkewistahaw's reserve. The area is forty-nine thousand nine hundred and twenty acres. The Weed creek runs through this reserve and empties into the Qu'Appelle river, through a large, densely wooded and steep ravine; it is very tortuous in its course. The southern portion of the reserve is undulating prairie with a few good hay marshes.

Tribe.—The majority of the members of this band are half-breeds, the remainder being Crees and Saulteaux.

Vital Statistics.—There were six births and three deaths, four Indians left the limits of the reserve, and two joined the band, one from Pasquah's reserve by marriage, and one returned who had been away. The population of the band is one hundred and fifty-six, composed of thirty-two men, forty-nine women, and seventy-five children.

Health and Sanitation.—During the year the health of these Indians has been fairly good. There were three deaths from consumption, and several more are suffering from it and scrofula, but a large quantity of cod liver oil and other necessary medicines is given to them when needed. They are particular in keeping their houses clean and in burning up refuse. They require more lime, which will be furnished them.

Dr. Allingham, assistant to Dr. Bird, has been very attentive in looking after the sick.

The children in the boarding school at the Roman Catholic mission and those at home have been vaccinated.

There were no epidemics of any kind on this reserve.

Resources and Occupations.—Being mostly half-breeds, the members of this band are more thrifty than the Indians on the other reserves; they have in most cases good farms, which yielded good crops this year. They are also very careful of their stock during the winter. They sell hay and fire-wood. The older people gather senega-root and berries, and make baskets, mats and bead-work. Fish are also caught in Crooked lake, so that in all they are very comfortable.

Buildings.—Several new stables have been built to replace old ones. Alex Gaddie is building a new house, 22 x 30, with stone foundations, that will cost when completed about $500. J. B. Sparvier is also building one worth about $300. Several smaller ones and additions are being made ready for the coming winter. Implement-sheds are being built. In all they have made good improvement in building.

A new frame grist-mill has been built to replace the old log one; it has a stone foundation and will last for many years. The Indians are much pleased with it

By the increase of acreage the mill and steam threshing outfit will be kept busy during the coming season. Mr. J. Sutherland has the charge of both, and he thoroughly understands the work.

Stock.—The stock is kept in the best possible condition, the increase has been fairly large. The Indians use some of the cattle for food and some are sold to pay for necessary machinery to put up the hay required for the others. They own a considerable number of private cattle that they can control the sale of.

Farming Implements.—They have a good supply of farming implements and from the proceeds of last crop and cattle have nearly paid what was due on them. In most cases the implements are well protected from the weather.

Education.—There are sixteen children attending the Qu'Appelle industrial school three are at the Regina industrial school, sixteen at Cowessess' boarding school, and two at the Round Lake boarding school.

As will be seen, there are thirty-seven children from this reserve attending boarding and industrial schools, which shows that the Indians of this band appreciate the benefits of education.

The boarding school at Cowessess' reserve is as complete as possible for a school of that kind to be, having all the necessary water-works, acetyline lights and a new blacksmith's, and carpenter's shop, where pupils are taught to work.

Seven Sisters have arrived to look after the little ones, and a great improvement is noticed since their arrival. There are now nearly forty children in this school from the various reserves. The Rev. Principal Perrault takes great interest in his work and will likely have sixty children next year, the building having the necessary accommodation.

Religion.—The majority of the band are Roman Catholics. Rev Father Perrault and two Brothers are very active in securing all the converts they can, and are meeting with fair success. There are a few that attend the Presbyterian church conducted by Rev. H. McKay, but the number is small in comparison.

Characteristics and Progress.—The members of this band being mostly half-breeds, their way of farming more closely approaches the ways of the white man, which can be noticed in their summer-fallowing, pasture-fields for stock, good fences, the destroying of weeds, and in other ways. They have also a superior class of horses and better furniture.

One headman, Joseph LeRat, for the firt time commenced farming, having put in twenty acres this spring. A. Gaddie is one of the best farmers on the reserve and is building a house that will be a credit to any farmer. J. B. Sparvier is another good worker, who is also putting up a good dwelling. Ambrose Delorme is also another very good worker,

They are all progressing and at the same time setting a good example to the others.

Temperance and Morality.—There have been no complaints made against any member of this band either for intemperance or immorality.

Sakimay's Band, No. 74.

Reserve.—This reserve is situated on the west side of the northern half of Cowessess reserve, being bounded on the south side by that reserve and on the north by Crooked lake and the Qu'Appelle valley, a small portion of the reserve (No. 74A) being on the north side of the lake and river.

This reserve contains twenty-five thousand two hundred and eighty acres. In addition to this, these Indians have the Leech Lake No. 73A reserve situated forty miles north containing six thousand nine hundred and seventy-six acres, which, being mostly hay swamps, bluffs and water, is very valuable to them, as the hay crop can be generally relied upon every season.

Sakimay's reserve is mostly undulating prairie with some bluffs of poplar and willow. In the northern part it is much broken by ravines which are heavily wooded. There were formerly large ponds on this reserve which have been for some years mostly dried up, although some of them have again filled up with water. About one half of the land is good loam, the other half is gravelly. There are some magnificent hay-lands at the west end of Crooked lake, but this year they are mostly under water.

Tribe.—Nearly all these Indians are Saulteaux with a few Crees.

Vital Statistics.—The population consists of forty-one men, fifty-two women and ninety-two children, making a total of one hundred and eighty-five. There were eleven births and twelve deaths. Four Indians arrived on the reserve and twenty-two left the reserve, and are, it is reported, living in the vicinity of Long lake.

Health and Sanitation.—There were more deaths than usual on this reserve, mostly of old people and deaths from consumption. There was also an epidemic of chicken-pox in September last, which was strictly quarantined by the Northwest Mounted Police and confined to Sheesheep's band. There were no deaths from it. A good many children were vaccinated on this reserve. The usual precautions were taken in reference to burning up refuse and whitewashing houses.

Resources and Occupations.—There are three bands that occupy this reserve, Yellow Calf's at Goose lake, Sheesheep's at the west end of Crooked lake, and a few of Little Bone's band from Leech lake.

They are all combined and live on Sakimay's reserves where their farming is done and also cattle-raising.

There has been considerable money in the past collected from Leech Lake reserve for hay permits, which in part has been expended for necessary farming implements; but this year the water is very high there, and it has also covered the hay-lands at the west end of Crooked lake, so that it will be necessary for the Indians to cut upland hay, of which there is a good supply. These Indians also sell a fair quantity of fire-wood, hay and grain; they also get plenty of fish in Crooked lake, sell senega-root and a little bead-work.

These Indians are good workers and manage to live comfortably from their labour. It is only the old and infirm that receive any free assistance from the department.

Buildings.—There are three new dwelling-houses in course of erection, one by Acoose, with a stone foundation, which when completed will cost about $350. There have also been several stables rebuilt, one by Yellow Calf, who has made one to accommodate twenty head of cattle. Sheesheep's band has well finished stables suitable for wintering an extra number of cattle if called upon to do so by outside persons.

Stock.—The stock on this reserve is always well looked after, there being good stables and plenty of good feed. The Indians have suffered by wolves killing calves this year, which diminished the increase of stock to some extent.

Farming Implements.—Their supply of implements is good, and they also purchased a new binder, also two new mowers, for which they paid part from money received from Leech Lake hay permits and from grain sold.

Education.—Eleven of the children are attending the Qu'Appelle industrial school, four are at the Elkhorn industrial school, two at the Cowessess boarding school, and five at the Round Lake boarding school.

The Indians of this band do not take enough interest in educating their children, particularly Sheesheep's band. The Rev. Mr. McKay is trying to start a day school, and I am of the opinion that, if that school is started, it will be possible to get some of Sheesheep's band to send their children there, and from there they could be drafted to the boarding schools. I will give him all the assistance that I can in this good work.

Religion.—These Indians are principally pagans. The Rev. Mr. McKay holds services when possible. He has a building purchased for a church, but it is not yet completed; he expects it to be finished soon.

Characteristics and Progress.—These Indians, although mostly pagans, are thrifty and good workers; but they are also inclined to dancing. They built a nice dance-house for the purpose of holding regular dances. It was necessary for me to have it destroyed, which put a stop to it all.

There are several very good farmers on this reserve. Acoose has a large farm and good crop, also Nahnahokemah. Both of these have extra good buildings as well. The members of Sheesheep's band, who have only commenced to farm, have put in nearly forty acres this year for the first time, so I am in hopes that this progress will continue. The principal thing is to make the start and the others will follow. Good land could be had here for ex-pupils to locate by themselves.

Temperance and Morality.—The conduct of these Indians has been better than last year, no complaints having been made, except for very small offences.

General Remarks.—In conclusion I wish to remark that the improvement since last year is extra good. The Indians repaid the seed grain from last crop. They have increased the acreage thirty-five per cent this year. The crop is looking well, and if it turns out as expected, they will be able to pay all their debts for machinery, &c.

The Indians are thankful for the liberal manner the department has treated them in building a new grist-mill, supplying new engine and separator, thorough-bred bulls, and a thorough-bred French-Canadian horse.

The new buildings furnished some of the staff have also conduced to the general satisfaction of every one.

The Indians are now in a cheerful, contented way and are progressing well.

I have to express my satisfaction for the great assistance I have received from all the members of the staff to bring about this result.

The agency was visited by the Hon. D. Laird, and Inspector McGibbon during the year, both of whom the Indians are always glad to see.

I have, &c.,

MAGNUS BEGG,
Indian Agent.

NORTHWEST TERRITORIES,
SASKATCHEWAN—DUCK LAKE AGENCY,
DUCK LAKE, August 15, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of this agency, for the year ended June 30, 1902.

ONE ARROW'S BAND, No. 95.

Reserve.—The reserve of this band is situated on the east side of the south branch of the Saskatchewan river, close to the settlement of Batoche, and has an area of sixteen square miles.

The soil is light sandy, in seasons with plenty of rain it produces a fair crop.

Tribe.—The Indians of this band are Plain Crees. Some of the young men graduates of boarding and industrial schools, are doing exceedingly well; with kindly care and help they will soon acquire sufficient to be independent.

Population.—The population is eighty-six, composed of fourteen men, twenty women and fifty-two children and young people under twenty-one years of age.

Okemassis' and Beardy's Bands, Nos. 96 and 97.

Reserves.—The reserves of these two bands border on Duck lake and its hay marshes. The total area is forty-four square miles. On Okemassis' reserve the soil is sandy; in dry years it will not produce a crop, the same may be said about the north half of Beardy's, but in the south and west half there is some very good sharp clay loam, they are now just beginning to work this and will get good results.

Tribe.—The Indians of these two bands are Plain Crees; the young men are doing wonderfully well, yet there are a number of old people, remnants of rebellion time, who are very helpless.

Population.—The population of Okemassis' band is twenty-five, composed of seven men, nine women and nine children and young people under twenty-one years of age; the population of Beardy's band is one hundred and thirty-nine, consisting of thirty-three men, thirty-six women and seventy children and young people under twenty-one years of age.

John Smith's Band, No. 99.

Reserve.—The reserve of this band is situated on both sides of the south branch of the Saskatchewan river, about fourteen miles southeast from Prince Albert, and contains thirty-seven square miles. The soil is all that could be desired with plenty of hay meadows and considerable timber for domestic purposes.

Tribe.—This band is composed of half-breeds, Plain Crees and Swampy Crees. They are rather lazy, not well off, but cheerful, letting the morrow provide for itself. They are most regular in their church attendance.

Population.—The population of this band is one hundred and thirty-six, composed of thirty-three men, thirty-one women and seventy-two children and young people under twenty-one years of age.

James Smith and Cumberland Bands, Nos. 100 and 100A.

Reserves.—The reserves of these two bands are situated on the Big Saskatchewan river near Fort-à-la-Corne, they contain ninety-two square miles; the soil on the north and butting on the river is sandy and poor, the remainder, much the larger part, is very good, rich ridges intercepted, with sloughs and hay swamps; the latter unfortunately cannot be relied on this year, as they are full of water.

Tribe.—These Indians are Plain Crees and Swampy Crees, very backward in knowledge of farm work, but in all are very good Indians. They must have intelligent supervision, and if they have confidence in the employee placed directly over them, they will do well; if this is not supplied them, then failure is the result.

Population.—James Smith's band has a population of one hundred and seven, consisting of twenty-five men, twenty women and sixty-two children and young people under twenty-one years of age.

The population of the Cumbe land band is one hundred and fifteen, composed of twenty-seven men, thirty-one women and fifty-seven children and young people under twenty-one years of age.

The total population of Duck Lake agency is six hundred and eight; the number of births was twenty, the number of deaths, thirty-three; ten came into the agency and eight left it, making a decrease of eleven.

Health and Sanitation.—The general health is exceedingly good. It is to be regretted as to the number of children who have died. This was not caused by any epidemic, but largely from want of knowledge and care. We ourselves have had no epidemic or contagious diseases on the respective reserves, yet we were surrounded on all sides with small-pox, but by close supervision we prevented any contact, further, with the use of plenty of lime, houses whitewashed inside and out, about the premises all debris was cleaned up and burnt. In these provisions I attribute our escape. All deserve credit, the Indians a goodly share.

Resources and Occupations.—There is an increase this year in the number of Indians who have turned farmers: they see the result of last year's crop, consequently they prepared land last spring and put in seed, all of which looks very promising. Those that have been farming have increased their acreage. All are most hopeful and contented. A lot of new land was broken last spring.

Buildings.—The dwellings and byres on the respective reserves are fairly good; improvements are going on as fast as they have the means to do this, but the necessary material costs a lot of money, but no debt for anything is encouraged or allowed if possible

Stock.—Cattle are doing extra well; our increase is not so large as it should be, but every means is used to have a larger increase. No female animals are disposed of without being replaced. Our class of cattle is of extra quality, and all bulls are pedigreed animals.

Farming Implements.—We have a fair supply, but with increased attention to farming, also the fitting out of those young men graduates of industrial schools, we have not quite sufficient.

Education.—We have in this agency one industrial school, Emmanuel College, at Prince Albert, under the auspices of the Church of England, as also one day school on John Smith's reserve, and one on James Smith's reserve, 'Fort à la Corne.' At Duck Lake there is a large boarding school under the direction of the Roman Catholic Church, which the Rev. Father Paquette has had charge of for a number of years. This school has an attendance of one hundred. The industrial and boarding schools are doing good work, as shown by the pupils graduating from there, returning to the reserves, settling down to work, helping their parents. The young men who are worthy should be helped to start in life for themselves; the parent have not the means, neither has the agent, so I suppose it must fall on the department to do what it can.

Religion.—Most of the Indians here profess to be Christians. One Arrow's, Okemassis' and Beardy's chiefly belong to the Roman Catholic Church; the members of John Smith's band are Anglicans and have a resident clergyman there, also a very good church-building; the Indians of James Smith's band are also members of the Church of England, have a nice church and a resident lay reader and visiting clergyman. All the Indians attend church regularly.

Characteristics and Progress.—Many of our Indians are advancing; they feel the value of money, they know how it must be got by work, and realize it must come by raising crops and care of their cattle. Last year's good crop has given an impetus to this. Some of our Indians had each over a thousand bushels of grain; they had gristed from this two thousand seven hundred and fifty pounds of flour. The consequence was that those who grew grain were exceedingly well off, living better last year than they had ever done before; others not so fortunate envied their good luck and it has made them determined to follow the example set them. This is progress.

Temperance and Morality.—The character of the Indian has improved; he now stays more at home, visits the town less, and very seldom we hear of any having liquor. All this tends to improve their morals, the improvement in which, I am glad to say, is most marked.

I have, &c.,

W. E. JONES,
Indian Agent.

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Indians Branding Cattle, Sarcee Agency, near Calgary, Alta.

NORTHWEST TERRITORIES,
ALBERTA—EDMONTON AGENCY,
STONY PLAIN, July 8, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the fourth annual report of my agency, for the year ended June 30, 1902, together with the yearly tabular statement and inventory of government property in my charge.

MICHEL'S BAND, No. 132.

Reserve.—This reserve lies some twenty-two miles northwest of Edmonton, and nine miles from the agency headquarters, but, owing to lack of bridges, I have to travel some twenty-four miles to get to it. It comprises about forty square miles or twenty-five thousand four hundred and eighty acres, about half of which is covered with timber, such as pine, tamarack and poplar, a large portion of which is valuable for buildings and lumber, the rest is open cultivatable land.

Tribe.—The Indians of this band originally came from an Iroquois tribe near Montreal, but, by intermarrying, many of them are Crees.

Vital Statistics.—At the census taken last autumn, the correct number in this band was ninety-seven souls, made up of fifteen men, twenty-one women, twenty-nine boys, and thirty-two girls. No census has been taken since, but I know of two births since then ; no deaths.

Health and Sanitation.—There has been no infectious sickness amongst them during the past year. This remark will apply to the whole of the five bands in the agency. For some years this reserve has been remarkably free from ailments, which is greatly due to the fact that all the Indians wear boots, live in houses the whole year, and generally take better care of their persons.

Resources and Occupations.—The members of this band may be said to be self-supporting, as they get, I may say, no help from the government. They have three hundred and thirty-seven acres in crop this year. On this, with the cattle, pigs, eggs and fowls, hay, dry wood for posts, buildings and fire-wood that they sell, they support themselves very comfortably.

Buildings.—Their houses are very superior to any other in the agency ; a new barn and a new house with dormer windows and a half glass door, have been built since my last report.

Stock.—The cattle on this reserve, numbering one hundred and seven, were well wintered and are in good condition.

Farm Implements.—The band is well supplied with all necessary farming tools. The Indians are purchasing a new steam separator this year for their own use, and to thresh for settlers who live around their reserve.

Education and Religion.—They all belong to the Roman Catholic church, which they attend regularly. Their children attend the St. Albert boarding school ; the parents are anxious that their children be educated.

Temperance and Morality.—I have never known a case of intemperance amongst them, and as there are no particular squabbles between the women, I should say that they lead moral lives.

Progress.—They are yearly progressing, as may be seen by the increased acreage, the barns and better houses being built, in which are found sewing-machines, organs, and one of them, who is a lover of sweet (?) sounds, has installed a phonograph, much to the delight of the other members of the band. This is the banner reserve of the agency; would that I could say as much for the others.

Joseph's Band, No. 133.

Reserve.—This reserve lies along the shores of Lac Ste. Anne, about fifty miles west of Edmonton, it is the furthest from the agency headquarters. It contains twenty-three square miles or fourteen thousand seven hundred and twenty acres, of which about twelve thousand seven hundred are of timber, much of a good saleable kind, but too far yet from a market to be very valuable.

Tribe.—With the exception of two or three, these Indians are all Stonies.

Vital Statistics.—This band had a population of one hundred and fortys-even at the last census, consisting of thirty-three men, forty-two women, forty-five boys and twenty-seven girls. There have been four births and no deaths since, that I have heard about: but many of the families are away in the woods hunting, where they remain the whole year, only coming in for the annuity payments.

Health and Sanitation.—They have enjoyed good health during the past year. As they are hunters, few sanitary precautions are taken; they live mostly in teepees, which they are constantly moving, thus keeping their surroundings clean.

Resources and Occupations.—They live entirely by hunting and fishing, at which they make a good living, judging by their dress and looks.

Buildings, Stock and Implements.—All their houses are of logs and for a hunting band are of a fair class; they are warm and are kept clean and tidy when occupied. The stables are of a poor class, but, as the Indians have only twenty head of cattle, they answer the purpose.

As they do not farm, they have few implements.

Education and Religion.—These people are all Roman Catholics. Their children attend school fairly regularly, that is, when they are at home; but the nomadic habits of the parents make the attendance very irregular, varying from two to thirty. Miss de Cazes took charge of this school last October, and the Indians express themselves as very pleased with the change. From the marked improvement I see in the cleanliness of the pupils and the surroundings, I am sure they are right in their conclusion.

Temperance and Morality.—I have not heard of a case of intemperance amongst these Indians; and if immorality exists, it is quietly kept to themselves, I have no doubt that it does exist, as there are several illegitimate children in the band.

Paul's Band, No. 133A.

Reserve.—W. G. Blewett has been farmer up to the 1st instant, when Mr. A. L. Pattison, of Edmonton, took charge of the reserve. Paul's reserve is situated thirty-five miles due west of Edmonton, twenty-three west of the agency headquarters, and sixteen south of Joseph's reserve. There are twenty thousand nine hundred and twenty acres in it, or thirty-three square miles; about fifteen thousand seven hundred acres are covered with timber. The open country is rolling and well adapted for farming purposes, as it is likewise for cattle, there being an abundance of hay and water.

Tribe.—These people are of the Stony tribe, except a few who joined the band by marriage.

Vital Statistics.—This band had a population of one hundred and forty seven at last census, consisting of thirty-two men, forty-two women, forty-six boys and twenty-seven girls. I know of two deaths and four births since then.

Health and Sanitation.—All necessary precautions are taken by the farmer to carry out sanitary conditions in the spring before the Indians leave their houses for the teepees,

and in the autumn before they return to them. Their health has been good during the past year, no epidemic has visited them. Consumption and scrofula will always be found amongst them, arising in the first case from their careless mode of living, such as having wet feet and wet clothes, which they sleep in, and largely from their immorality.

Resources and Occupations.—Grain-growing has been tried this year for the first time by these Indians, they putting in some sixteen acres of crop; they only lack a market to make it successful, as the settlers around them raise magnificent crops. We trust that the Canadian Northern railway will pass close to this reserve, which will do away with their obstacle to growing crops—no place to sell them; but at cattle-raising they are doing better than any other band in the agency, which I attribute a good deal to the watchful care of Farmer Blewett, who during the past year has managed to restrain them from killing their young stock, which is one of the greatest obstacles towards ultimate success that Indian agents have to contend against. They are hunters, at which they make a fair living, besides they live on the banks of White Whale lake, which is teeming with pike and whitefish and wild-fowl.

Buildings.—There are one or two fair log houses, but huts predominate. They are all warm, too warm; they are kept clean and tidy.

Stock.—These people's cattle, which number ninety-seven head, turned out last spring in splendid condition; but there is much room for improvement in their stables.

Implements.—The members of this band purchased a new mower, rake and wagon last year out of their interest money, and will buy double the number of these articles this year. They have all necessary tools for the little farming that they do.

Education and Religion.—These Indians are all Methodists with the exception of twenty Roman Catholics and three claiming to be pagans. There is a good school-house on the reserve and the department's usual grant to day schools is available, but the missionary has not seen fit to open it. A number of the children attend the Red Deer industrial school.

Temperance and Morality.—I have had no case of intemperance brought before me during the year, but I fear that there is a good deal of quiet drinking done by the Indians during their hunting expeditions, the liquor being given to them by a trader, who lives close to their hunting grounds.

I am afraid that their morality is very lax.

Characteristics and Progress.—The chief progress that I can report, is, as already stated, a start being made in grain-growing, and that the pernicious habit of killing their young cattle has practically stopped, although there were one or two cases of it, mainly that of Chief Paul, who was promptly deprived of his chieftainship.

Alexander's Band, No. 134.

Reserve.—This is one of the best reserves for farming in the agency; it lies forty miles by road west by north of Edmonton, and four miles due north of Michel's reserve. It contains forty-one square miles, or twenty-six thousand two hundred and forty acres, about half of which is timber.

Tribe.—Most of this band are Crees; a few claim to be Stonies.

Vital Statistics.—They numbered one hundred and ninety souls at the last census, composed of forty-eight men, fifty-nine women, forty-seven boys and thirty-six girls. Since then three deaths and eleven births have been reported to me.

Health and Sanitation.—The members of this band have enjoyed good health during the past year, no infectious disease having visited them. These people as well as all others in the agency were vaccinated at last year's annuity payments. Farmer Bard sees that the winter's garbage, which collects around most of the Indian houses, is raked up and burnt, also that their houses are kept clean and whitewashed.

Resources and Occupations.—These people do a good deal of hunting, especially during the winter; they have quantities of pike or jackfish in Sandy lake on their

reserve, so there is no occasion for them to go hungry, provided they are not too lazy to set their nets. They put in no grain crop at all last year, although they used to farm on a fairly large scale for Indians; but this spring they repented of the error of their ways and sowed and planted ninety-two acres of grain and roots. They realize a good many dollars from the sale of hay and dry wood, which added to the assistance that they get from the government, keeps them comfortably. A number of them work for farmers who reside close to the reserve, and from report work well. If they would only work as hard for themselves, they would soon be comfortably off, although a number of them are physically unfit for doing steady manual labour, owing largely to many of them being afflicted with scrofulous sores, which break out chiefly on the neck.

Buildings.—Their houses and stables are of a poor description, chiefly huts, the chief has the only decent habitation on the reserve; but as they live from the early spring until the beginning of the winter and when they are away hunting, in teepees, their residences answer the purpose. I consider that until the hunt is no longer a source of profitable revenue, this and other hunting bands will not settle down to regular work. Can we blame them?

Stock.—I am glad to be able to report that during the past year these Indians kept entirely from killing their young cattle. They have one hundred and thirty-six head, which wintered well, with abundance, some eighty tons, of hay over.

Implements.—These Indians have a sufficiency of implements for the amount of farming that they do; they bought out of their beef money, a new wagon, mower and rake last year.

Education.—The children are educated at the St. Albert boarding school.

Religion.—They are all Roman Catholics with the exception of two Methodists. They have a church and resident clergyman on the reserve.

Temperance and Morality.—Last winter I gave one member of this band a month in jail for being drunk, and the woman who gave him the liquor, two months. If liquor is offered to them, they will not turn their backs to it, and I fear a good deal of drinking goes on at the house of the trader, where members of Paul's band get it, which I referred to under the head of that band; but as it is one hundred miles from all civilization, it is impossible to catch them, and they are very loyal to the people who supply them.

Their morals are no better, I fancy, than any of the other bands, except Michel's, nor will they be until the nightly tea dance, the curse of Indian morality, has been entirely stopped.

Progress.—I can report but little real progress amongst these Indians with the exception, as already mentioned, of putting in a grain crop this year, and having ceased to kill their calves; the former is due to Farmer Bard's persuasiveness, and the latter greatly owing to Chief Alexander's fear of being deposed for allowing the practice to go on, as he got an 'eye-opener,' when Chief Paul was deposed. Farmer Bard is deserving of a good deal of credit for having greatly improved the farm-buildings, besides having built two corrals, a lot of new fencing, and two good substantial bridges over deep gullies on the reserve.

Enoch's Band, No. 135.

Reserve.—The agency buildings are situated on this reserve, the east side of which is some eight miles from Edmonton. Deducting the land surrendered, which I will refer to further on, its area is thirty and a half square miles, or nineteen thousand five hundred and twenty acres, of which some eleven thousand acres are timber-land.

Tribe.—All the Indians of this band belong to the Cree tribe.

Vital Statistics.—There are one hundred and twenty-two souls in this band, consisting of thirty-eight men, forty-two women, twenty-two boys and twenty girls; since the last renumeration was taken at the 1901 annuity payments, there have been two deaths and five births amongst them.

Health and Sanitation.—Their health has been remarkably good during the year, any deaths that took place were those of young children. There is one case of phthisis on the reserve, it is in a consumptive family; otherwise there is no sickness amongst them, and there are several octogenarians, besides two or three who are pretty nearly a century old, on the reserve. All necessary sanitary precautions are taken.

Resources and Occupations.—Farming and cattle-raising are the chief pursuits followed by this band, but from the small way they have in the past carried on the former, and the ruinous habit they have of killing their calves, neither of them has been successful. Their chief paying industry has been the sale of dry timber for posts, rails, buildings and fire-wood, from which they make a large amount of money during winter; besides they work for surrounding settlers and in town.

Buildings.—There is not much improvement to report in their dwellings, but they are building a much better class of stables for the heavy horses they are getting.

Stock.—Their cattle number two hundred and thirty-nine head, all of which are fat and sleek. Six pedigreed bulls run with the herd.

Education and Religion.—At last year's census one hundred and one claimed to be Roman Catholics and twenty-one Methodists. The former have a church and resident missionary on the reserve, which they attend regularly, and the Methodists are visited now and again by the school teacher, Mr. Lent, from Paul's band.

The three in that band who gave their religion as pagan, told the truth. In my forty years dealing with Indians, I have never yet met a Christian one, that is defining the adjective as we understand it. This may appear a pretty hard statement, but I have yet to find the Indian who will not steal, lie, and be immoral; and as to keeping Sunday, it is only when they are in the presence of the missionaries that they appear to do so, when they are once out of sight, they will be found gambling, hunting and dancing. This is as I have found it; I trust others will have had experiences that will more favourably impress them.

There are no schools kept open on the reserve, the children attending St. Albert, Hobbema and Red Deer schools.

Temperance and Morality.—I am pleased to be able to report that during the past year I have not had a case of drunkenness come before me, but I do not for one minute think that there are not several of the band who use liquor when the occasion offers in the way of visiting lazy, good-for-nothing half-breeds, who help to eat the Indians' food in exchange for the liquor which they purchase for them, the former, of course, getting their share in the spree, which they usually hold in some quiet, out-of-the-way place.

I am afraid that their morality is bad.

Progress.—I can report a good deal of progress in this band during the year, all, I hope in the right direction. They have about completed twenty-one and a half miles of a barb wire fence round their reserve; the fence is a good one, made of seven feet long tamarack posts, twelve feet apart, which are sunk two feet in the ground with three wires and a heavy top rail. The cost of this work was paid for by the Indians out of their capital account. They will now be able to keep their own cattle from wandering and those of outsiders from grazing on the reserve. During the year these Indians surrendered fourteen square miles of their reserve, which is now being sub-divided by the department's surveyor, Mr. A. W. Ponton. From the proceeds of the sale of this land the Indians are getting a large supply of horses, harness and all kinds of farming machinery; all able-bodied men who will go in for farming get an outfit, and the old people a supply of clothing; the total cost of the same being about $10,000. Up to date of writing, I have only purchased six teams out of the thirty horses to be given to them, which I have given to the best workers, who so far have made a creditable showing, having broken one hundred and thirty-eight acres of new land and summer-fallowed sixty acres of old land, which proves that the scheme of giving them this outfit is one in the right direction. Besides this, the department has been pleased to transfer Farmer W. G. Blewett, from Paul's band, to a like position here, and as he has proved a good man in the past, no doubt with the new horses and implements these people are getting, he will make a success amongst them. After surrendering the fourteen square miles, they

have still left thirty and a half sqnare miles, the largest portion of which is splendid open conntry with the best of soil. They have some one hundred and twenty-two acres of crop and roots in this year. They only got out some three hnndred and fifty logs last winter, which, when sawn at their mill, made sixteen thonsand eight hundred feet of lumber. The mill also sawed nine thousand two hnndred feet and made some forty thousand shingles for settlers who live aronnd the reserve. The Indians chiefly used their lumber for improving their houses and their new stables for their horses, as they are very proud of the latter; they should be, as they are animals weighing about thirteen hnndred pounds each, which, with the new harness and wagons, look very showy, pleasing to the heart of an Indian. They hired a blacksmith last spring and got some eight sets of strong home-made birch bob-sleighs ironed, besides numerous other repairs done.

General Remarks.—The past spring is considered to have been the coldest and wettest this part of the country has ever known; all bridges over the conntry were swept away, which greatly impeded traffic, besides making it very disagreeable and dangerous. However, so far the snmmer has been fine and warm, and crops are all looking well, the prospects being very bright for a good harvest. Dr. Harrison is strenuously endeavouring to alleviate the suffering of his Indian patients by prescribing medicines, leaving drugs in their absence with dispensers at different points and giving directions how to use them.

I have, &c.,

JAS. GIBBONS,
Indian Agent.

NORTHWEST TERRITORIES,
ALBERTA—HOBBEMA AGENCY,
HOLLBROKE, July 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour of submitting my report of this agency covering the past fiscal year,—and also of presenting an inventory of all government property under my care at this date with the value of the same.

Agency Headquarters.—The office of this agency is situated on the Battle river about ten miles down from and north of the town of Ponoka and has under its care the following reserves.

Reserves.—Samson's reserve, No. 137, lies to the southeast of the Calgary and Edmonton railway about half-way between the towns of Ponoka and Wetaskiwin. It contains sixty-one and a half sqnare miles.

Ermineskin's reserve lies to the northwest of Samson's, commencing near the Calgary and Edmonton railway and extending across the railway to the Bear Hills lake eight to nine miles. It also comprises sixty-one and a half sqnare miles.

Louis Bull's reserve lies in the northwest part of Ermineskin's and is not yet portioned to the band.

The Montana or Little Bear's reserve lies south of Battle river and Samson's reserve and to the northeast of Ponoka, and contains thirty-one and a half square miles.

The Pigeon Lake reserve lies fifty miles to the northwest of Ermineskin's, contains seven and a half square miles, and is for the use and privilege of the Indians of the above bands.

The sum total of these reserves is one hundred and three thousand eight hundred and sixty acres, or one hundred and sixty-two square miles.

Tribe.—The Indians of these different bands are Crees.

Population. —The population, which somewhat fluctuates, numbered at last annuity payment six hundred and seven.

Health and Sanitation.—The health of the tribe during the year has been satisfactory, there being no epidemic of any kind.

Every precaution was taken to preserve health by gathering and burning all rubbish about the villages as soon as the spring opened. During the summer the Indian plan of living in tents or lodges has been followed, which is rather conducive to Indian health.

Resources and Occupations.—The natural resources and occupations of this tribe are varied, but farming and cattle-raising are the chief, all other occupations being subordinate to them.

In farming the land the Indian sees that wheat is the main crop, and this year he has made a greater endeavour than ever before to increase the acreage of wheat sowing.

Stock.—In cattle-raising this year the tribe has been very successful. There are a greater number of calves than hitherto, and more of the stock, both as to size and quality, shows a marked improvement. This is also very gratifying, and the Indians are much beholden to the department for the pure-bred imported bulls.

I am impressing the Indians with the importance of these valuable spheres of labour, that they may more and more make use of these advantages to their own advancement—that learning to be farmers and stockmen will make men of them and give them the best education.

Education.—The education of the Indian children is looked after by the Methodist and Roman Catholic Churches, both being aided by the department.

The Methodist Church has two day schools—one on Samson's reserve and one on Louis Bull's reserve—at which there is an irregular attendance of fifteen, with fair progress as the result.

The Roman Catholic Church has charge of a boarding school on Ermineskin's reserve, where fifty children of school age are in regular and constant attendance, with, of course, a much greater degree of progress.

Religion.—Two missionaries look after the spiritual needs of the tribe, one from the Roman Catholic Church and one from the Methodist. About a tenth of the tribe continues pagan and two-fifths belong to the Roman Catholic Church, while about the half belong to the Methodist Church.

There is, however, a sort of unity amongst them, for all the tribe united to hold a sun dance during the summer, and saw no incongruity in returning to their ancient rites and ceremonies, for a few days, combining the prayers of the Church with pagan ceremonies, and making pagan vows and keeping them with Christian fortitude. This is an Indian characteristic, and worth studying.

Characteristics and Progress.—Yet, notwithstanding what has been said in the preceding paragraph, there is a gradual giving up of Indian customs. Even as ebb tide occasionally shows a higher and advancing wave, nevertheless the ebb continues.

Temperance and Morality.—Occasionally a little intemperance is brought to my notice, but I would call the tribe on the whole temperate, and as a rule moral.

General Remarks.—There are many old, and sick and incapable Indians under the care of this agency. Of farmers in all the bands there are sixty-six. These farmers were able to keep their own families and also provide enough beef for these incapables; the department purchasing the same to the extent of thirty-seven thousand pounds for that purpose.

In the logging camps a greater number of logs have been cut than usual, and these have been hauled to the saw-mill here to be cut into lumber for building and repairing purposes.

The grist-mill has been of great service to the Indians during the year and they have not failed in taking every advantage it affords.

In these and many ways the Indians show they are gradually leaving the tendencies of a nature that hundreds of generations have bequeathed to them.

I have, &c.,

W. S. GRANT,
Indian Agent.

NORTHWEST TERRITORIES,
EAST ASSINIBOIA—MOOSE MOUNTAIN AGENCY,
CARLYLE, July 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report together with statistical statement and inventory of government property under my charge for the year ended June 30, 1902.

WHITE BEAR'S BAND.

Reserve.—This reserve is situated in the southeast part of the Moose mountain, about nine miles north of the town of Carlyle, with an area of thirty thousand two hundred and eighty-eight acres, of which a large portion is covered with poplar woods, hay-meadows, and lakes, in some of which fish are caught, such as pike, pickerel, and mullet.

The southeastern part is fairly level with a sufficient quantity of excellent arable land for the use of the band for farming purposes. This reserve is well adapted for mixed farming.

Tribe.—The Indians occupying this reserve are a mixture of Cree, Saulteaux and Assiniboines.

Vital Statistics.—They number one hundred and ninety-nine souls, consisting of sixty-one men, sixty-six women, thirty-seven boys, and thirty-five girls.

There were seven deaths and eight births, one man joined the band by transfer and two women and one child became affiliated with the band by marriage, making an increase of five during the year.

Health and Sanitation.—The general health has been good. There has been no disease of a contagious nature among them Dr. Hardy, of Carlyle, is the medical officer and he inspects the Indians and their premises monthly.

The sanitary condition of all buildings and premises is well looked after. All the Indians requiring to be vaccinated were attended to. No opposition was met with, and some of the Indians who were done last year asked to be vaccinated again, as the previous vaccination did not leave good marks on their arms.

Resources and Occupations.—The Indians depend largely on their grain crop, cattle, and the sale of wood, logs, poles and willow posts for their living; the women gather, and sell a large quantity of wild fruit during the berry season. They also catch fish in the White Bear lake, and this forms a valuable addition to their food-supply. During the winter months the women tan cow-skins for the white settlers.

Their grain crops were very good last year, and provided them with seed, and a good deal of flour.

After providing an ample supply of hay for their stock, they were able to sell some to the neighbouring settlers, and the remainder, over sixty loads, has been well fenced and will be kept for next winter's use.

Buildings.—The agency buildings are being repaired, and put in good order.

The Indians from the western reserves all built new dwelling-houses and stables for themselves last fall. Most of the houses are well built, and all are floored with lumber.

Every Indian house on this reserve is floored with lumber and well lighted with windows. This adds to the comfort, health and cleanliness of the Indians.

Stock.—Three thorough-bred bulls were added to the herd this year. The cattle were well looked after during the past winter. They were inspected and counted by Inspector McGibbon, in February, and he seemed pleased with the excellent condition they were in, many of them being beef fat. As only thorough-bred bulls have been used in the herd for years, the quality of the cattle is of a high order.

The stables are built in the bush, and are well sheltered from the winter storms, and convenient to a good water-supply.

Farming Implements.—The Indians are well provided with farming implements, and machinery, which are kept in good repair.

Education.—A day school is being erected on the reserve, and as the Indians asked to have it built, a good attendance is hoped for.

They freighted all the material such as lumber, shingles, brick, &c., from Carlyle willingly without being paid for the work.

Religion.—Mr. Dodds, Presbyterian missionary, looks after the spiritual welfare of the band. Services are held at the mission every Sunday, and the attendance has been from twenty to forty during the past year.

The Indians are taking an increased interest in hearing the Scriptures read to them in their own language.

The missionary is ably assisted in his work by Mrs. Dodds, who teaches the women sewing, knitting, and other work; Mrs. Dodds is also teaching them to sing hymns in their own tongue with considerable success.

Characteristics and Progress.—The Indians are increasing in possessions, and only four out of the whole lot are in debt, and those only for small amounts. Every effort is being put forth to prevent them from going into debt. The women are taking an increased interest in keeping their houses and persons clean.

Four ex-pupils from the industrial schools are making fair progress at farming.

Fred Waywinchekappo, an ex-pupil of Regina school, has eighteen acres of wheat, and two acres of barley in crop this year. He has a nice garden as well, and has taken out a sufficient quantity of logs to build himself a good house and stable, and he is now engaged breaking up more land.

Emile Kakakeway, ex-pupil of Qu'Appelle school, has ten acres of wheat and a nice little herd of cattle.

Xavier McArthur married an ex-pupil of Qu'Appelle and they are making their home on the reserve. He is making good progress at farming, and cattle-raising.

Temperance and Morality.—I have not heard of a single case of intemperance during the past year, and the moral character of these Indians is very good. No charges have been brought against any of them during the year for infraction of the law.

General Remarks.—The Indians of Pheasant Rump's band, No. 68, and Striped Blanket's band, No. 69, surrendered their reserves to the government in March 1901, and they have united with White Bear's band, No. 70.

The united bands get along harmoniously together.

The example of the men from the western reserves, who are good workers, is proving a stimulus to the Crees, and many of the young men of that tribe who have hitherto been considered useless have expressed a wish to start farming, and ask to be supplied with implements and oxen. The fence around the grain-fields has been enlarged so as to include a sufficient quantity of arable land for the use of the Assiniboines from the western reserves.

The work of fencing the whole reserve is now under consideration. This fence when completed will be a great benefit to the Indians.

They have gone to work more cheerfully than usual this summer, and have broken up over sixty acres of new land so far this year.

As I now have to perform all the duties in connection with the management of this agency without assistance, my time is fully occupied.

I have, &c.,

W. MURISON,
Farmer in charge.

NORTHWEST TERRITORIES,
SASKATCHEWAN—ONION LAKE AGENCY,
ONION LAKE, July 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the affairs of this agency for the fiscal year ended June 30, 1902, also a statistical statement and an inventory of government property under my charge.

The following are the reserves comprised in this agency: Seekaskootch, No. 119, Weemisticooseahwasis, No. 120, Ooneepowhayo, No. 121, Puskeeahkeeweins, No. 122, Keeheewins, No. 123, Chipewyan, No. 124.

SEEKASKOOTCH BAND, No. 119.

Reserve.—This reserve, containing an area of thirty-eight thousand four hundred acres, is situated to the north of Fort Pitt on the Saskatchewan river. The northern portion is hilly with bluffs of poplar and pine. The centre is flat with some marshes from which a considerable quantity of hay is procured in favourable seasons. To the south there are good grazing lands and hay is also plentiful.

Vital Statistics.—The population of this reserve is two hundred and fifty-five souls, made up as follows: fifty-six men, sixty four women and one hundred and thirty-five children and young people under twenty-one years of age. There were fifteen births and six deaths during the past twelve months, and through marriage and commutation five women joined the band and eight left.

WEEMISTIKOOSEAHWASIS BAND, No. 120.

Reserve.—This reserve is contiguous to Seekaskootch reserve on the western side, its area is fourteen thousand and eighty acres and the surface rolling, poplar groves are numerous and in favourable seasons a considerable quantity of hay can be cut on the marshes.

Vital Statistics.—Five births and six deaths occurred on this reserve during the fiscal year, the only causes of change in the population, which is now one hundred and seven, made up of twenty-four men, twenty nine women and fifty-four children and young people under twenty-one years years of age.

OONEEPOWHAYO'S BAND, No. 121.

Reserve.—This reserve is situated round the south end of Frog lake and contains an area of twenty-one thousand one hundred and twenty acres. Poplar and spruce

abound in groves, especially towards the south where it is very hilly, towards the north it is not so hilly, and over all the soil is sandy loam. Hay is plentiful.

Vital Statistics.—The population of this band is ninety-two, made up of twenty-two men, twenty-nine women and forty-one children and young people under twenty-one years of age. Three births and two deaths occurred during the year and five joined through marriages and transfers.

Puskeeahkeeweins Band, No. 122.

Reserve.—This reserve forms the northern and a portion of the western boundary of Ooneepowhayo's reserve, also a part of the western boundary of Frog lake. It contains an area of twenty-five thousand six hundred acres, with a hilly surface, studded with poplar groves and with favourable seasons a fair supply of hay can be found.

Vital Statistics.—One birth occurred on this reserve, but no deaths, and two women joined by marriage, making the total population thirty, made up of four men, ten women and sixteen children and young people under twenty-one years of age.

Keeheewins Band, No. 123.

Reserve.—This reserve is situated to the northwest of Frog lake and contains an area of seventeen thousand nine hundred and twenty acres. There are numerous hay swamps and the soil is a rich loam. A large alkali lake forms part of the northern boundary and in this lake is a large island well wooded with poplar, spruce and birch: the whole reserve abounds in poplar and spruce with occasionally a few birch-trees.

The most industrious Indians of the five reserves already dealt with have been brought onto Seekaskootch and Weemistekooseahwasis reserves, which adjoin one another and on the former of which are situated the agency headquarters. The other Indians of these five reserves make their living hunting, fishing, freighting and working for traders and settlers.

All these Indians are treated as one band under the head of Seekaskootch band No. 119.

Seekaskootch Band, No. 119.

Tribe.—These Indians belong to the Cree nation.

Health and Sanitation.—An epidemic of measles prevailed during the winter and there were several deaths not from the disease itself but from the after-effects due chiefly to the caution, given by the doctor and others against exposure to cold and getting wet feet, not having been followed; mumps also prevailed towards the end of the winter and during the spring, but no deaths were attributable to the disease.

There are several Indians suffering from consumption and scrofula, also weak eyes, otherwise the state of health is at present good. A liberal supply of lime, burnt on the reserve, was allowed the Indians, many of whom took advantage of it and whitewashed their houses.

The epidemic of small-pox which was checked before the close of the last fiscal year did not reappear, though such was the case in other parts of the country, and our good fortune is no doubt due to the attention given to thorough vaccination at the following treaty payments.

Resources and Occupations.—Cattle-raising is the industry to which these Indians principally turn their attention, and the local demand for beef was almost entirely supplied from Indian cattle. Grain-growing is not followed to any great extent, but one hundred and fifty-three sacks of flour were ground from Indian wheat at the agency mill, which was no little help; over $300 was realized by the sale of oats and barley, the greater amount of which was expended on flour, other provisions and clothing.

These Indians are not slow to take hold of any opportunity that presents itself of earning money by working for traders and others, resident or passing through the

country; they also earn a good deal from the different missions who generally employ Indian labour in preference to hiring outside help. The women are as a rule diligent, and it is to be noticed that the younger women who have been at the different Indian schools are very helpful in their homes, especially with their needlework, both knitting and sewing, and most of the work is very neatly done, there are two cases worthy of particular notice during the past year.

Buildings.—In respect to houses these Indians are not far advanced. The houses are small, all made of logs and only a few with pitched roofs; still they are warm and of the kind well built. I look for an improvement during the coming year, as some of them have hauled logs to the mill and had lumber sawn with that object in view. It is only in the colder weather that the houses are occupied. When spring comes and the weather is at all propitious, the houses are deserted and the tents are occupied. It is noticeable that of those who have made new tents many are making the wall A tents, such as are used by white people when camping, in preference to the old teepee, and most of them have camp stoves. It is also noticeable that those who have these tents keep them clean and tidy.

With regard to stables, some are good and well kept during the winter, which is the only time they are used to any extent. While there are others that cannot be so well spoken of, the owners of these are of the fitful kind, tractable at times and at other times difficult to influence in the right direction.

Implements.—Most of the Indians who have implements of their own are careful of them, and they are kept in good repair by the department employees, at which work the owners generally assist. One mower, one horse-rake, one wagon and two bob-sleighs have been purchased out of Indian earnings during the year.

Stock.—The cattle are of a mixed kind, but of fairly good size. The natural increase has so far not been very satisfactory, but there are still a number of cows to calve. The Indians feed and water their cattle well during the winter, but sometimes it is difficult to get to stable properly. These are the men who are careless about their stables.

Education.—There are two boarding schools on the reserve, one under the guidance of the Church of England, and the other conducted by the Roman Catholic mission. Neither school confines itself to the instruction of Indian children only, which helps in a great measure in getting the Indian children forward in speaking English. There is occasionally a little trouble caused by desertion, caused at times by the parents, but as a rule they are persuaded without much difficulty to send the truants back. Good results are evident of the instruction given at both schools, and among the Indians living on the reserves are a number of young men and women who speak English, having learned the language at the Onion Lake boarding schools.

Religion.—There are two churches on the reserve—one Church of England and one Roman Catholic—both of which have their adherents, some of whom attend very regularly at the Sunday services. There are but few pagans to be found among the working Indians, most of those who are not classed as belonging to either church are to be found among the hunting Cree Indians.

Characteristics and Progress.—The desire of most of these Indians is to become self-supporting, and they are making a success of cattle-raising, their main industry. Sam Waskawitch I would mention as one of the most industrious and promising men. He has built new stables, put up a strong fence round his grain-field, has lumber to improve his house and has a good influence over his fellow Indians. He will soon have a mower and rake of his own and is on the right road to become independent of department assistance. A harmless tea dance is not infrequently indulged in, and 'giving away' is not altogether a thing of the past, but it is not so much in vogue as formerly. The dress of the white man is now almost entirely adopted by the working Indians.

Temperance and Morality.—No cases of intemperance have come under my notice, and I can safely say that it is not a fault of these Indians. On the whole they are well conducted and law-abiding.

With regard to morality I think they compare favourably with other Indians.

Chipewyan Band, No. 124.

Reserve.—The district inhabited by these Indians is situated on the Beaver river, about sixty miles north of the agency, but a reserve has not yet been laid out for them.

Tribe.—These Indians belong to the Chipewyan tribe.

Vital Statistics.—The population of the band is two hundred and fifty-three, made up of fifty-three men, seventy-three women and one hundred and twenty-seven children and young people under twenty-one years of age.

Health and Sanitation.—Measles and mumps also attacked these Indians and the after-effects of the former epidemic caused several deaths. There are a good many suffering from consumption and weak eyes, while many of the old are blind, but the general health of the band is at present fairly good. Vaccination was very thoroughly attended to at treaty payments, although it was not known that any of them had suffered from small-pox during last year's epidemic.

Resources and Occupations.—These Indians receive no assistance to speak of from the department, and support themselves by hunting, fishing, and raising cattle. Husbandry is carried on to a very limited extent, garden produce and potatoes are all that is attempted. The women are industrious, hard workers, often doing the work of men, hauling hay and attending to cattle while the men are away hunting.

Buildings.—The Chipewyan houses are superior to the Crees', most of them are larger and have gable roofs and the workmanship is better and more complete; their stables also compare favourably with those of the Cree Indians and are generally well kept.

Stock.—The cattle owned by these Indians are always well provided for, hay being abundant and the pasture good. The class of cattle, however, is not so good as that of the Crees.

Implements.—They are well supplied with mowers and rakes, though some of them are old and nearly used up; they are, however, yearly getting one or two new ones added to their number, which they pay for in furs and sometimes in cattle.

Education.—There is no school in the district, but seven children attend the Roman Catholic boarding school at Onion lake, a distance of sixty miles. Formerly there was a day school at the settlements, but it was closed on account of the irregular attendance.

Religion.—All the Indians of this band belong to the Roman Catholic Church, there is no sign of paganism about them, and when they are not absent hunting, a large congregation attends the church at the Roman Catholic mission known as the 'Cold Lake mission,' and in their worship they conduct themselves very devoutly.

Characteristics and Progress.—The Chipewyan Indians are good hunters and trappers and cannot be called industrious except in such occupation which for years has been their chief source of existence. They generally have about the same number of cattle, but at last winter's count there was a slight increase.

Temperance and Morality.—I do not know that any of the Indians have a failing for intoxicants; and I understand that their moral character is good.

Government Herd.

On account of the heavy rains of last summer the part of the country where these cattle have usually been wintered was so much flooded that hay could not be cut there in sufficient quantity, and the only other place within reasonable distance where hay was procurable was on the south side of the Saskatchewan river. The location of the ranches was, therefore, changed and the plant moved a distance of sixty to seventy miles. With no small effort a sufficient quantity of hay was saved, and three ranchers were established where the cattle were successfully wintered. The increase this year is not large, the number of head at present being close on six hundred. All the animals are in good condition, the feed being excellent where the cattle are now ranging on the north side of the river not far from Fort Pitt. The prospects of getting hay in the same place this year are fairly good.

I have, &c.,

W. SIBBALD, *Indian Agent.*

NORTHWEST TERRITORIES,
ALBERTA—PEIGAN AGENCY,
MACLEOD, August 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the report of this agency for the fiscal year ended June 30, 1902, together with the usual statement of agricultural and industrial statistics covering the same period.

Reserve.—The Peigan reserve is situated on the Old Man's river, west of Macleod. Its form is almost square and its area one hundred and eighty-one and two-fifths square miles, or more than one hundred and sixteen thousand acres. In addition to the reserve proper the Peigans have, in the Porcupine hills, a timber limit containing eleven and a half square miles. The lately constructed Crow's Nest railway passes through the reserve from the northeast to the southwest corners, there being fifteen miles of track and two sidings (Nos. 5 and 6) within the reserve limits.

This reserve is composed of undulating prairie-land and untimbered hills, all being suitable for grazing purposes. Favourably situated among the hills are several large springs of good water to which the range cattle have easy access throughout the whole year, while the Old Man's river, which flows through the reserve, and Beaver creek, which enters from the north, afford an abundance of water during the open seasons.

Tribe.—The Peigans are a portion of one of the three tribes—Blackfeet, Bloods and Peigans—which form the Blackfoot nation or family in the great Algonkian linguistic stock. These Peigans are commonly, and more accurately, designated the 'North Peigans' in order to distinguish them from the larger branch of the tribe—the 'South Peigans'—who are United States Indians located in Montana.

Population.—The population of the reserve is five hundred and thirty, of which total number one hundred and fifty are men, one hundred and sixty-eight are women and two hundred and twelve are children under sixteen years of age. Further details in connection with this subject are shown in the tabular statement.

Health.—The general health of the Peigan Indians during the past year cannot be reported as good or even fair. In the winter months there was a large amount of sickness, resulting, I regret to say, fatally in so many cases that some thirty-four deaths have been recorded since the annuity payments in November. Consumption, in its various forms, is as usual the principal trouble.

Resources and Occupations.—Many years of fruitless efforts having demonstrated the fact that on account of climatic conditions and the quality of the soil, this reserve is unsuitable for farming, no further attempts in that direction are being made. Root-crops, however, do fairly well when unmolested by gophers, a good crop of potatoes being the general rule. The reserve being favourable for stock-raising, and its inhabitants naturally inclined to that occupation, special attention is being directed to the cattle industry.

Cattle.—Although the natural increase was adversely affected by a severe storm that occurred during the calving period this year—our calf crop numbering but three hundred and seventy head at the spring branding—and though a considerable number of cattle of all ages are known to have been drowned in the phenomenal inundations that lately visited this section, the year, nevertheless, cannot be classed as an unfavourable one for the Peigan cattle, which now total fourteen hundred and twenty-three as compared with twelve hundred and six last year, some seventy-nine head having been killed for beef in the interval. As an indication that the Peigans have in late

years adopted more intelligent methods in the handling of their cattle, it might be noted that these people began their stock-raising in the early eighties with several hundred cows, but after an experience extending over a decade and a half—long enough for their herd to increase to thousands—they had but five hundred and sixty-seven head in 1898, which, however, increased to seven hundred and seventy-four in the following year and to nine hundred and fifty-seven in 1900. The figures above quoted for 1901 followed by a count of over fourteen hundred this year make a record for four years sufficiently encouraging to justify a belief that by means of the cattle industry the Peigans can be made a self-supporting people. The time necessary to accomplish this result will be long or short according to the care with which the present herd is managed, and to the amount of assistance rendered by the department in the form of heifers with which to start in business those Indians who are still quite destitute.

The importation of registered bulls from Manitoba and Ontario, which has been our practice for several years, has improved the quality of our stock to such an extent that they are already recognized as being a first-class herd of cattle.

Buildings and Implements.—The improvements in dwellings incidental to the possession of a saw-mill, continue throughout the reserve. Some ten frame houses are now occupied by the Indians, with the immediate erection of several others arranged for.

A few new wagons were purchased during the year as well as harness, mowers and horse-rakes.

Education.—The Church of England and the Roman Catholic boarding schools, in which are forty Indian pupils, still continue with commendable zeal their efforts to elevate the mental and moral standard of the children entrusted to their care.

Hay-making.—Messrs Maunsell Bros. having given an order for five hundred tons of hay for the wintering of their cattle on the southeastern part of the reserve, a hay-making party of Indians was organized towards the end of August and the hay was put up with dispatch. The outfit consisted of twenty mowers, six two-horse rakes, twenty wagons with two pitchers on each wagon, sixteen or eighteen stackers and a couple of night herders for the work horses. The whole quantity of hay was put into four large stacks, two being built simultaneously and close together. Two teams unloaded on each side of each stack, thus eight racks could be unloaded together. Two of the stacks were completed after four days' work, when all hands quit work, and attended a circus which visited Macleod just then. The circus was followed by a snow-storm, after which they returned to the hay camp and in four and a half days built the other two stacks and dispersed, the Indians resuming their individual hay-making operations, which had been interrupted by the contract. After the Maunsell stacks had been standing for thirty days and had also been settled by wind and rain, they were measured and at five hundred and twelve feet to the ton were found to contain six hundred and thirty odd tons, which, representing eight and a half days' work, is not bad for the Peigans' first attempt at filling a large hay contract. In fact so far as I can learn, it is the record for quick hay-making.

Saw-mill.—Three thousand two hundred and eighty-one logs were cut at our mill this season, producing over three hundred and forty thousand feet of lumber, of which a large quantity was matched flooring, ceiling and siding.

In addition to the great advantage that the reserve derives from the cheapness of lumber, due to home manufacture, the mill furnishes a large amount of profitable employment to the Indians.

I have, &c.,

R. W. WILSON,
Indian Agent.

NORTHWEST TERRITORIES,
ASSINIBOIA—PELLY AGENCY,
COTÉ, July 14, 1902

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report for the year ended June 30, 1902, together with tabular statement and inventory of government property.

Reserves.—This agency is made up of Coté's band, No. 64; the Key band, No. 65, and Kisickouse's band, No. 66.

Coté's reserve is situated on the east side of the Assiniboine river, close to the Duck mountains, having an area of thirty-six thousand one hundred and sixty acres.

Key's reserve is on the Assiniboine river, sixteen miles northwest from the agency headquarters, and has an area of twenty-four thousand three hundred and twenty acres.

Kisickouse's reserve adjoins Coté's on the east side of the Assiniboine river, and has an area of eighteen thousand three hundred and four acres.

Tribe.—The Indians of Coté's and Kisickouse's bands are Saulteaux; those of Key's band are Swampy Crees.

Vital Statistics.—The population of Coté's band consists of sixty men, sixty-seven women, seventy-four boys, and fifty-eight girls; total, two hundred and fifty-nine.

Key's band consists of fifty-one men, sixty-six women, forty-nine boys and fifty-five girls; total, two hundred and twenty-one.

Kisickouse's band is made up of thirty-six men, forty-seven women, thirty-two boys and thirty-six girls, making a total of one hundred and fifty-one souls.

There were forty births and forty-one deaths during the year. Five Indians have joined the bands here through marriage, making an increase of four since last year.

Health and Sanitation.—During the year two cases of small-pox occurred, one at the agency headquarters and the other on the Key's reserve, but owing to quarantine being enforced and sanitary precautions taken, I am glad to say that the disease was confined to these two cases, which were of a mild type.

Outside of the usual percentage of chronic scrofulous cases, the general health of the Indians has been fair and free from epidemics. Dr. Cash, the medical attendant, is very painstaking and earnest in his work, and a good supply of medicines is kept on hand at the office.

Resources and Occupations.—The Indians here are engaged principally in hunting, stock-raising, farming and freighting. A good many obtained work this spring on the Shell river, driving saw-logs, but, although they were paid high wages, they brought little, if any, money home with them.

Fur has been a good price all winter and those engaged in hunting earned a good deal in this line.

The acreage of land under crop was larger than usual, but unfortunately we had a terrific hail-storm in August last, which destroyed a large portion of very promising grain.

About seventy-one acres of new land have been broken and cropped this year, and the Indians seem to realize the advantage of farming; they are anxious to do more, but the exceptionally long spell of bad weather prevented them from doing as much as they intended.

Seventy-nine head of beef cattle were sold for the Indians and the sum of $3,275.56 was realized. The value of beef sold and consumed represented $2,460, making a total of $5,735.56 derived from their cattle during the year.

INDIANS BRANDING CATTLE, SARCEE AGENCY, NEAR CALGARY, ALTA.

Education.—On Côté's reserve the boarding school has forty-two pupils on the roll. This school is under the direction of the Presbyterian Church and is conducted by the Rev. Neil Gilmour, to whom congratulations are due as having the model school of its kind. The class-room is in the charge of Miss Petch, whose ability as a teacher is shown by the proficiency and progress of the pupils. The buildings and premises are in good order and are well kept.

On Key's reserve a day school under the direction of the Church of England is managed by the Rev. Owen Owens. The number of pupils on the roll is nineteen with an average attendance of nine. The progress made by the pupils is very good. The school-house and premises are clean and the children look neat and tidy.

The day school on Kisickouse reserve is under the auspices of the Roman Catholic Church. Mr Felix Ingold is the teacher. The number of pupils on the roll is nine with an average attendance of four. Very little interest is shown in this school by the parents, and the result is a very irregular attendance.

Buildings.—During the year nine houses and two stables have been built.

Stock.—Owing to the mild winter, a good many Indians had some hay over, and the cattle came out in good condition, but a good many young stock died from an epidemic of black quarter.

Three thorough-bred short-horn bulls were sent in by the department this spring, and they are very fine animals. We have now fifteen thorough-bred bulls on the reserves here, the progeny from which should be above the ordinary run of cattle, considering the great natural advantages of grazing land, shelter and good flowing water everywhere.

The cattle now number seven hundred and fifty-four, not counting the calves of this season.

Religion.—The Indians of Coté band belong to the Presbyterian Church, Key's band to the Church of England, and Kisickouse band to the Roman Catholic Church. There is a church on each reserve, and divine services are well attended by the members of their respective churches.

Characteristics and Progress.—I think that compared with other years the Indians have done better than usual, that is, they do not appear to lean so heavily on the government as formerly, and I must say they are gaining a very good idea of the value of money. For all this, I am sorry to say that I find them very shiftless; but I think that a desire to better themselves seems to be gaining ground and no doubt they will improve with the march of time.

The Singuish brothers seem to be progressing, they have broken, cropped and wire-fenced forty acres of new land; they have also purchased themselves a seeder and a self-binder.

The supervision of that portion of Key's band residing at Shoal river has been transferred to the Lake Manitoba inspectorate, as it was nearly impossible to give them the necessary attention owing to the condition of the trails and the distance.

These Indians number one hundred and fifty-eight souls. They are included in the population of Key's band this year, but will be struck off the pay-lists at the annuity payments.

Temperance and Morality.—I have had no personal knowledge of Indians obtaining intoxicants, but I have no doubt some of them do, and owing to the number of foreigners in this district, it is impossible to locate the persons who supply them.

As regards their morality, I think, taking into consideration their numbers, they are fairly moral and law-abiding in their habits.

General Remarks.—A new stable at the agency headqnarters, 24 x 30 feet, is in course of construction. This building was very much required, as the old stable was unfit for keeping horses in. General repairs to agency dwellings much required will be attended to during the season.

The agency staff consists of a clerk and labourer, who perform their duties in a satisfactory manner.

Major McGibbon made a thorough inspection of the agency office and reserves in the early part of June, and seemed well pleased with the condition of affairs in general.

I have, &c.,

R. S. McKENZIE,
Indian Agent.

NORTHWEST TERRITORIES,
ASSINIBOIA—QU'APPELLE AGENCY,
QU'APPELLE, August, 14, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902, together with statistical statement and inventory of government property.

The following are the reserves included in this agency: Piapot's, No. 75; Standing Buffalo, No. 78; Pasquah's, No. 79; Muscowpe ung's, No. 80; Peepeekesis, No. 81; Okanase, No. 82; Star Blanket's, No. 83; and Little Black Bear's, No. 84; making a total of eight reserves in all.

PIAPOT'S BAND, No. 75.

Reserve.—The reserve belonging to this band comprises the whole of township 20 and a portion of 21, in range 18, west of the 2nd meridian, and contains a total area of fifty-eight square miles.

The reserve is not particularly adapted for grain-growing, the soil being very light and sandy; but it is noted for the abundance of hay that grows on that portion of the reserve situated in the valley of the Qu'Appelle. The reserve is well adapted for stock raising, there being plenty of good grazing land and fresh running water.

Tribe.—The Indians of this band, with one or two exceptions, belong to the Cree tribe.

Vital Statistics.—There are forty-five men, fifty-five women, thirty boys and twenty-one girls in the band, making a total of one hundred and fifty-one. There were four births and six deaths during the year. Two women joined the band through marriage, three returned who were absent, and eight Indians left the reserve.

Health and Sanitation.—The general health of the Indians of this band throughout the year has been wonderfully good. Most of them were re-vaccinated during the year. The sanitary regulations of the department were carried out as far as it was possible to do so.

Resources and Occupations.—The Indians of this band have worked fairly well during the year, many of them have enlarged their fields and built new fences and stables. The area under crop this spring is considerably more than that of last year. The Indians of this reserve sell a large quantity of hay and wood in the town of Regina, and a great deal of their time is taken up with this work. Although many of them make a good living in this way, I do not encourage them to depend entirely on this way of earning a livelihood, as the time is not far distant when the wood-supply will be exhausted, and they will have to depend more on stock-raising and farming as a means of earning a livelihood. These Indians have had a fairly successful year with their stock, the herd having increased from one hundred and seventeen to one hundred and forty-eight head, an increase of thirty-one, after selling and killing some eight or ten head.

Buildings.—The houses on this reserve are not large, nor are they of a good quality. This is principally due to the fact that there is very little timber on the reserve fit to build with. Although these houses are small and not much to look at, the interiors, in most cases, are neat and comfortable.

Stock.—The cattle on this reserve are of a good quality, being principally grade shorthorns. In the past the department has supplied these Indians with thoroughbred bulls, as they have been required. A few of these Indians have good work horses, but the majority of them own a lot of ponies that are of little, if any, use for work.

Implements.—These Indians are in much better condition now than they were a year ago in the matter of farm implements; during the year they purchased a self-binder, several ploughs and one or two wagons, all of which have been paid for out of their own earnings.

Education.—The Indians of this band take very little interest in education, although I must say, I have noticed a slight change in their attitude towards the schools. During the year several children from this band have been placed in the Regina and Qu'Appelle industrial schools.

Characteristics and Progress.—I think I can safely say that these Indians have made some progress during the year. In the first place, little, if any, rations have been given to them, they having grown sufficient grain to make enough flour for their own use. They have, as I have said before, purchased quite a few new implements with the proceeds of sale of grain, and their cattle have increased after using what they required for their own use. They have broken a large quantity of new land and built several new wire fences. The dancing, which had always been carried to excess on this reserve, has ceased; in fact, I only know of one small dance taking place during the year. I have lost no time in doing everything in my power to discourage this excessive dancing, as it certainly does more to demoralize work on the reserve than anything else I know of.

Temperance and Morality.—Not a single case of intemperance or immorality has come to my notice, on this reserve, during the year.

Muscowpetung's Band, No. 80.

Reserve.—This reserve is situated on the Qu'Appelle river, between Piapot's and Pasquah's reserves, and contains an area of fifty-eight square miles. The section of the reserve situated in the Qu'Appelle valley is very valuable for the large quantity of hay it produces every year, while the upland portion is good soil and well adapted for grain-growing. There is very little timber on this reserve.

Tribe.—Most of the Indians of this band, if not all, belong to the Saulteaux tribe.

Vital Statistics.—There are twenty-six men, thirty-five women, sixteen boys and twenty girls belonging to this band and at present residing on the reserve. During the year there were seven births, and three deaths. Fifteen Indians returned to their reserve from different parts of the country, and four Indians left the reserve.

Health and Sanitation.—The general health of the Indians of this band has been fairly good throughout the year. Scrofula and pulmonary diseases were the main cause of what sickness they had.

Resources and Occupations.—The principal occupations of these Indians are stock-raising and grain-farming. The cattle on this reserve are of a fine quality, being principally shorthorn grades. During the past twelve months, the herd has increased from one hundred and forty-two to one hundred and eighty-four head, being an increase of forty-two after deducting twenty head butchered and sold; and from the present outlook, the increase promises to be even greater next year. The Indians of this reserve take more interest in their stock than those of Piapot's band, and I feel satisfied that inside of four years the herds will increase to double what they are at present.

These Indians grew sufficient grain last year to supply themselves with flour for the year. They also sold a quantity of wheat, and with the proceeds purchased several new ploughs, a new disc harrow, and a new self-binder.

In addition to stock-raising and farming, these Indians sell a large quantity of dry wood and hay, for which they usually receive good prices.

Buildings.—The buildings on this reserve are similar to those on Piapot's reserve, the same difficulty in obtaining suitable timber existing. Although these houses are small, they are well furnished and quite comfortable.

Education.—The Indians of this band take little interest in the education of their children, although I must say that the opposition to schools is not nearly so strong as it has been in the past.

Religion.—Most of the Indians in this band are pagans

Characteristics and Progress.—The progress on this reserve during the year has been marked. Little, if any, government rations were issued, the Indians being able to provide for themselves what beef and flour they required. I have done everything in my power to do away with the issuing of rations to this and Piapot's band, and it is a pleasure for me to state that the system of rationing is almost entirely abolished. This year, a saving of twenty-two thousand pounds of beef and two hundred sacks of flour has been effected with these two bands alone. The Indians have not suffered in the least through the stopping of these rations; in fact, they have benefited by it, for they no longer waste time scheming to get food out of the storehouse, and they now see that they have to earn what food they use.

It is also a great pleasure for me to be able to say that there has not been a single dance on this reserve during the past year. This, in itself, is a great improvement, for, as the department is aware, dancing was very often carried to excess on this and Piapot's reserve.

Many of the Indians of this reserve are becoming quite industrious; the successful season they had last year has given them renewed energy, and this spring quite a large quantity of new land has been broken, several new fences built and the increase in area under crop is considerable.

Temperance and Morality.—No cases of intemperance or immorality have come to my notice during the year.

Pasquah's Band, No. 79.

Reserve.—This reserve lies about six miles west of the village of Fort Qu'Appelle, and has as its northern boundary the upper Qu'Appelle lake. It extends back from the lake about eight miles, and covers an area of sixty square miles. As in the case of Piapot's and Muscowpetung's, part of this reserve lies in the Qu'Appelle valley and the rest on the uplands. The reserve contains more timber than either Piapot's or Muscowpetung's, some of it being of a good size and suitable for building purposes.

Tribe.—The Indians of this band belong to the Saulteaux tribe with a slight admixture of Cree.

Vital Statistics.—There are thirty men, fifty women, twenty-five boys and thirty-two girls on this reserve, making a total of one hundred and thirty-seven. There were seven births during the year. One man and four girls died. One Indian returned to the reserve during the year.

Health and Sanitation.—The general health of the Indians of this band has been fairly good throughout the year, no epidemic of any kind having visited them. There are a few cases of scrofula and consumption, as is the case on most reserves. These Indians are very cleanly in their habits and most of them keep neat and tidy houses and premises, and it is very seldom that I have occasion to find fault with an Indian on this reserve for not keeping his place clean. The sanitary regulations of the department are well carried out. Most of these Indians were re-vaccinated this spring.

Resources and Occupations.—These Indians are not so fortunate as those on Piapot's and Muscowpetung's reserves in having such an abundant supply of hay on their reserve, and as a consequence are unable to go as extensively into stock-raising as I should like to see them. They have, however, about one hundred and fifty head of cattle, for which they manage to secure sufficient hay. These Indians go in more exten-

sively for grain-growing than the Indians of the two reserves above mentioned, and last year they had a heavy crop. This spring a large quantity of new land was broken, which means that the area under crop next year will be considerably more than that of this year.

Buildings.—The dwellings and stables on this reserve are of a good class, being much superior to those on the two reserves above mentioned. Many of the dwellings are one and a half stories high with shingled roofs and well finished. The improvement in the style of the buildings that are being erected each year is quite noticeable, in fact many of the houses recently built compare with those of the surrounding white settlers.

Implements.—The members of this band are well supplied with farm implements, all of which have been purchased with their own earnings.

Stock.—The cattle, which are principally grade shorthorns, are of a good quality. Many of these Indians own good work horses.

Education.—The Indians of this band take more interest in education than either of the two bands above mentioned. There is hardly a child of school age in the band that is not attending school.

Religion.—Most of the Indians of this reserve profess Christianity. The Roman Catholic and Presbyterian bodies each have a neat church on the reserve.

Characteristics and Progress.—The Indians of this band are progressive and entirely self-supporting. During the past year they have worked well and their condition has greatly improved.

Last year they had a large crop, which they sold at a good price. The cattle herd has increased and this fall quite a few three-year-old steers will be sold.

No dancing has taken place during the year.

Temperance and Morality.—No cases of intemperance or immorality have come to my notice during the year.

Standing Buffalo's Band, No. 78.

Reserve.—The reserve owned by these Indians covers an area of seven square miles lying in townships 21 and 22, in range 14, west of the 2nd meridian. The soil is very light indeed for grain-growing, except in wet seasons, when it does well.

Tribe.—These Indians belong to the Sioux, or Dakotahs, and were formerly residents of the state of Minnesota, in the United States.

Vital Statistics.—There are fifty-five men, sixty-six women, forty-six boys and forty-eight girls in this band, making a total of two hundred and fifteen. During the year four births and two deaths were reported. Forty-five Indians returned to the reserve during the year.

Health and Sanitation.—The Indians of this band are a healthy lot. During the year there has been very little sickness. The sanitary regulations of the department are well carried out. The women on this reserve are exceptionally clean and their houses and premises are always neat and tidy.

Resources and Occupations.—These Indians have to depend on farming and working out for whites for a living, for they have no wood or hay on their reserve to sell. However, with these great disadvantages they are not behind their neighbours on Pasquah's reserve in making a living for themselves. The men are good workers and as a rule have small farms, on which they raise sufficient grain for their grist and a little for sale. They also grow large quantities of potatoes and other roots. Many of these Indians own a few head of stock and occasionally have a beast to sell. As I have said before, the men on this reserve are good workers and every fall, after they have completed their own work at home, they go out and work for the white farmers in the harvest-fields, and I am told by farmers who have employed them that they are first class workers and give good satisfaction.

This spring these people put in a large crop, and at the present time everything looks very promising. About one hundred acres of new land were broken on this reserve last year, and an additional one hundred acres were broken this year, which brings the area under cultivation considerably higher than it ever was before. Of course these Indians are entirely self-supporting and do not depend on the government for anything.

Buildings.—On account of the scarcity of building material on this reserve, the houses are not all that could be desired. Still they are not too bad.

Implements.—The Indians of this band are well supplied with agricultural implements.

Stock.—The cattle, which number about fifty head, are a fine lot and are well cared for. These Indians own a good class of horses and are improving them every year.

Religion.—Most of the Indians of this band profess the Roman Catholic faith.

Education.—Nearly all the children of school age belonging to this reserve are attending the Qu'Appelle industrial school.

Temperance and Morality.—No cases of intemperance have come to my notice during the year, and I have heard nothing of immorality among these Indians.

File Hills Bands.

Reserves.—These Indians occupy four reserves, viz.: Peepeekeesis No. 81; Okanase, No. 82; Star Blanket, No. 83; and Little Black Bear, No. 84. These four reserves contain a total area of one hundred and twenty-six square miles and are situated in the File Hills, about twenty miles northeast of Fort Qu'Appelle.

Tribe.—The Indians of the four bands belong to the Cree tribe.

Vital Statistics.—The total population of the four bands consists of sixty-four men, seventy-six women, thirty-eight boys and fifty-three girls, making a total of two hundred and thirty-one. There were twelve births; and three women, three boys and two girls died during the year. Four Indians returned to the reserves and eleven left.

Health and Sanitation.—The general health of these Indians has been good throughout the year; of course there are a few who are suffering from scrofula and consumption, but I must say that I think these diseases are fast disappearing. I do not see nearly so much of these diseases as formerly. Every man, woman and child on these four reserves was thoroughly examined this spring, and those who required it were re-vaccinated. These Indians, with one or two exceptions, keep decidedly neat and clean houses and premises, and I have no difficulty in seeing that the department's sanitary regulations are carried out.

Resources and Occupations.—The natural resources of these reserves are hay and wood, of which there is a large quantity.

The principal occupations of these Indians are stock-raising and mixed farming, at which they have been very successful. During the year the herds have increased from seven hundred and fifty-five to eight hundred and thirty-three head, an increase of seventy-eight after deducting ninety head killed and sold. Last year these Indians had a large crop, which they sold at good prices. In addition to what they sold to buyers at the elevators, they supplied the Indian Department with five hundred and fifty-five sacks of flour for other agencies. With the proceeds of grain and cattle sales, these Indians have been able to supply themselves with new implements, work horses and lumber, and they are now in splendid condition. This spring about seven hundred acres of new land were broken and the area for crop next year will be increased considerably.

The Indians of this portion of the agency have worked hard during the past twelve months, and it is very seldom that one sees an idle man. Last year these Indians put up over twenty hundred tons of hay and hauled it to the stables before winter set in. The prospect for a large crop this year is good. Several new log granaries were built last year, and this year there is sufficient lumber on hand to build six new frame granaries.

Buildings.—The agency buildings at File Hills are in good repair, those belonging to the Indians are neat and tidy, many of them being built one and a half stories high with shingled roofs. At the time of writing this report, four houses are under construction in the colony that was started this spring for ex-pupils residing on the reserve. These houses are one and a half stories high with shingled roofs and on stone foundations.

Stock.—The cattle on these reserves are improving in quality each year. This fall about seventy three-year-old steers will be sold by the Indians.

These Indians own many fine horses, several of which were purchased quite recently with their own earnings. This spring I arranged to have a thorough-bred Clyde stallion make a stand on the reserve. The Indians are paying for this service themselves.

Education.—The File Hills boarding school, under the auspices of the Presbyterian Church, is doing work The school is under the care of Miss Gillespie, who is painstaking in the discharge of her duties. Many children from these reserves attend the Qu'Appelle industrial school. These Indians are not opposed to sending their children to school.

Temperance and Morality.—No cases of intemperance or immorality have come to my notice during the year.

General Remarks.—In conclusion, I can safely say that I think the Indians on all the reserves throughout the agency have made advancement; they have cost the government little outside the salaries of employees, and everything points to greater results next year.

I have been greatly assisted by the farmers on the different reserves and by Mr. Ashdown, my clerk, who is kept constantly employed with office work, which has very much increased during the year.

I have, &c.,

WM. GRAHAM,
Indian Agent.

NORTHWEST TERRITORIES,
ALBERTA—SADDLE LAKE AGENCY,
SADDLE LAKE, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the fiscal year ended June 30, 1902, together with statistical statement and inventory of government property under my charge.

SADDLE LAKE BAND, No. 125.

Reserve.—The reserve of this band is situated in townships 57 and 58, ranges 10, 11, 12 and 13, west of the fourth meridian. The area, including the southwestern portion occupied by Blue Quill's Band, No. 127, is eighty-two thousand five hundred and sixty acres.

The north and west portions of the reserve are undulating prairie-land, while to the southeast it is more level. There are numerous small hay swamps scattered throughout the reserve, some of which produce a good supply of hay, in seasonable years. Poplar groves abound all over, with here and there an occasional clump of spruce. One of the most attractive features of the reserve is its adaptability for stock-raising.

The lake from which the reserve derives its name is situated close to the northern boundary, about half-way between the northwest and northeast corners.

Tribe.—The inhabitants of this reserve belong to the Cree nation.

Vital Statistics.—The population inclusive of Blue Quill's band, No. 127, is two hundred and forty-three, consisting of sixty-four men, sixty-seven women, and one hundred and twelve children. There is an increase of six persons as compared with the previous year, accounted for as follows:—births thirteen, deaths thirteen, and six Indians joined the band, three by marriage, and three from the Beaver Lake band, No. 131.

Health and Sanitation.—The health of the Indians generally has been good, with the exception of an epidemic of mumps, and measles, which prevailed during the winter, and a few standing cases of consumption and scrofula. The sanitary regulations of the department have been carried out as far as possible. The whitewashing of houses in the fall, and the cleaning up of the premises in spring are generally attended to.

Resources and Occupations.—Stock-raising is the principal industry from which these Indians derive a living, and to this occupation particular attention is directed. Farming operations are also carried on, and last season the grain and root crops turned out fairly well. Eighty-eight sacks of flour were ground for the Indians, being the product of a portion of their wheat crop. When not engaged on the reserve, some of the Indians obtain work freighting.

Buildings.—During the year two new houses and five stables were erected on the reserve, to replace old ones. In summer the people prefer living in their tents and move to different places, finding it healthier during the warm weather.

Stock.—The stock is in excellent condition, and came through the winter in good order.

Farming Implements.—These Indians have a very fair supply of machinery, and this year they have purchased six new ploughs, and one wagon, with the proceeds derived from freighting.

Education.—The day school situated on the Saddle lake portion of the reserve, is under the auspices of the Methodist Church, and has been conducted with moderate success, on account of irregular attendance, due chiefly to the indifference of the Indians.

The boarding school is located on the portion of the reserve occupied by Blue Quill's band, and is under the management of the Roman Catholic mission. The pupils have made good progress in their class work, and the various industries taught in this institution. The buildings inside and out are kept scrupulously clean, and tidy. The pupils are well dressed, and clean at all times, reflecting credit upon the reverend Sisters who look after them.

Religion.—The members of Saddle Lake band are Methodists and Roman Catholics, the former denomination having the majority. Services are held in the schoolhouse. The Indians of Blue Quill's band nearly all belong to the Roman Catholic faith, and regularly attend service conducted by the Rev. Father Grandin and the Rev. Father Balter at the mission situated on the reserve.

Characteristics and Progress.—These Indians are quiet and law-abiding, neat in their personal appearance, and generally keep their houses clean and tidy. I observe a strong tendency amongst them to improve the condition of their dwellings. A number of the Indians who have no land under crop, have invested in ploughs, and are at present engaged in breaking new land for next season.

Temperance and Morality.—During the year no cases of intemperance have come before my notice, and the morality of these Indians, generally, is fair.

James Seenum's Band, No. 128.

Reserve.—This reserve is situated north of Saddle lake, in townships 61 and 62, ranges 12 and 13, west of the 4th meridian. It is a long strip of land of about twelve miles in length, running north and south, along the shores of Goodfish and Whitefish lakes, and has an area of eleven thousand two hundred acres.

Most of the land is rolling, and wooded with poplar, and a few patches of spruce. In parts the soil is stony, but in favourable seasons, grain can be successfully grown. Whitefish lake is an extensive sheet of water, and produces whitefish and jackfish.

Tribe.—The Indians occupying this reserve belong to the Cree tribe.

Vital Statistics.—The Indians inhabiting this reserve have a population of three hundred and thirty-one, made up of eighty-one men, ninety-seven women, and one hundred and fifty-three children. Since the last census there has been an increase of eleven in the population: the births numbered twenty-two, while the deaths amounted to ten, and one woman left the band through marriage.

Health and Sanitation.—The general health of this band at present is good, and could have been considered so throughout the year, but for the prevalence during the winter of mumps and measles. Sanitary measures are enforced as strictly as possible.

Resources and Occupations.—Mixed farming is followed by the people of this reserve. About two hundred and thirty-two sacks of flour were produced from last season's wheat crop, ground at the grist-mill on the reserve. Stock-raising is the chief source of livelihood for them, and when not employed in farm work on the reserve, they engage in trading, freighting, and working on the Hudson's Bay Company's boats in the north; others do a little hunting. Last winter the Indians had about thirty-five thousand feet of lumber sawn, for building purposes on the reserve. In winter a good supply of fish is taken from the lakes, which contributes greatly towards their support.

Buildings.—Six new houses, four stables, and a granary and implement-shed have been built this year; in some cases they replace old ones. The buildings are of log and are kept in good repair, being mudded every fall and made comfortable for winter.

Stock.—The cattle are in good condition, and generally well cared for.

Education.—Two day schools are supported on this reserve,—one at Goodfish lake, towards the south end, and one close to the Methodist mission, at the north end of the reserve. Both schools are under the auspices of the Methodist Church, and throughout the year the attendance at each has been good. Satisfactory progress has been made.

Religion.—The Indians of this reserve are mostly Methodists. The mission is situated at the north end of the reserve, where there is a church, in which services have been regularly held by the Rev. E. B. Glass. This spring a new church was erected at Goodfish lake by this denomination.

The Roman Catholic church is located near Goodfish lake, about the centre of the reserve, and regular services are conducted there by the Rev. Father Comire. The Indians show considerable interest in their religion, and attend their respective places of worship regularly.

Characteristics and Progress.—These Indians are fairly industrious, and the spirit of independence is strongly developed in some of them. This spring quite a number of them increased their crop area. In their personal appearance they are clean and well dressed.

Lac la Biche Band, No. 129.

This band numbers sixteen in all, consisting of three men, seven women and six children. They are all half-breeds, and live by hunting, trapping and freighting.

Chipewyan Band, No. 130.

The population of this band at the last treaty payments was seventy, composed of thirteen men, twenty women and thirty-seven children. During the year there was one birth, one death and one woman joined the band. These Indians live altogether by hunting, trapping, and fishing, and occupy the district surrounding Heart lake, about one hundred and five miles north of the agency headquarters.

BEAVER LAKE BAND, No. 131.

These Indians inhabit the country round about Beaver lake, about twelve miles from Lac la Biche, and make a living hunting and fishing. They receive very little assistance from the department, beyond what is given them at treaty payments. The population at last census was ninety-nine, made up as follows:—twenty-five men, twenty-nine women and forty-five children. During the year two births and three deaths took place, two Indians joined the band and four left it, one through marriage, and three to join Blue Quill's band. This band has decreased three.

General Remarks.—On July 1, the Indians got up a programme of amusements for the afternoon, and every one appeared to enjoy them.

The annuity payments commenced at the agency on July 17, and were concluded at Lac la Biche on the 23rd. Everything passed off very quietly.

I have, &c.,

GEO. G. MANN,
Indian Agent.

NORTHWEST TERRITORIES,
ALBERTA—SARCEE AGENCY,
CALGARY, July 31, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to report on matters in connection with this agency for the year ended June 30, 1902, together with agricultural and statistical statement and inventory of all government property under my charge.

Reserve.—The Sarcee reserve comprises township 23, ranges 2, 3 and 4, west of the 5th initial meridian, and contains an area of sixty-nine thousand one hundred and twenty acres.

The agency headquarters are situated on the Fish creek about nine miles south-west of the town of Calgary.

The western portion of the reserve is heavily wooded with fir and poplar, while the eastern end is a good stock range and portions of it suitable for grain-raising.

Tribe.—These Indians originally came from the far north and are said to belong to the Beaver tribe; they speak a distinct language from the Blackfeet and other southern Indians and mix but little with them.

Vital Statistics.—The population of this band is two hundred and three, being a decrease of two since last year.

Health and Sanitation.—The health, generally speaking, of these Indians has been good, and we were fortunate in escaping any serious epidemics during the year. Consumption and scrofula were the principal causes of death. The usual sanitary precautions, such as keeping premises clean, have been closely observed.

Resources and Occupations.—Farming, stock-raising, haying, working for white settlers, selling hay and wood to townspeople keep these people pretty well employed, and from such work many of them make a good living and are improving their condition.

Buildings.—Each year some improvements are noticeable. A new frame dwelling-house was erected this year for the chief, all the work on the same being done by the Indians themselves excepting the stone foundation, for which a white mason was

employed. The building is well finished and is a credit to those employed on it. A neat fence has also been erected around it..

Stock.—Stock-raising is our most important industry, and I am much pleased to report that many of our Indians are taking more interest in it than formerly.

Farming Implements.—The Indians are becoming better equipped each year with mowing-machines, rakes, wagons, sleighs, harness, binders, seeders, &c., besides all the necessary small implements found on a well furnished farm. These articles are now all supplied out of their earnings.

Education.—The boarding school here is running along in its usual course. There are eight girls and seven boys on the roll, being its full complement.

A number of our children are also attending the Calgary industrial school, and I am glad to report, are giving a good account of themselves.

Religion.—The Church of England has a mission on the reserve, in close proximity to the agency headquarters, and services are held regularly by the Venerable Archdeacon Tims, the incumbent. Besides the pupils, a number of the Indians are steady attendants.

Characteristics and Progress.—Many of these Indians, I am safe in saying, are improving their condition and are slowly but surely advancing in the ways of the white man.

Temperance.—The Sarcees, like many Indians, of other tribes, have a most decided weakness for strong drink, and although everything is being done to stamp out this evil, I fear but little headway is made in this respect.

I have, &c.,

A. J. McNEILL,
Indian Agent.

NORTHWEST TERRITORIES,
ALBERTA—STONY AGENCY,
MORLEY, July 18, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902, together with tabular statement and inventory of government property.

Reserve.—The Stony reserve is situated in the foot-hills of the Rockies, forty miles west of Calgary, and is divided by the Bow river, Jonas's band on the north and Chiniquay's and Bearspaw's bands on the south side of the river.

The Canadian Pacific railway follows the Bow river through the reserve, Morley station being only half a mile from the agency headquarters. With the exception of the southeast corner of the reserve, it is nearly all gravel hills. The area is sixty-nine thousand seven hundred and twenty acres. It is estimated that nearly two-thirds of this is covered with timber, spruce, Douglas pine, jack pine and poplar.

Tribe.—These Indians are Stonies, a branch of the Sioux nation.

They have intermarried largely with the northern Crees.

Vital Statistics.—The present population is six hundred and sixty-one, made up of one hundred and fifty-seven men, one hundred and eighty-eight women, one hundred and sixty-four boys, and one hundred and fifty-two girls, being an increase of twenty-four over last year.

Health and Sanitation.—The health of these Indians has been exceptionally good, there having been very little sickness and few deaths. I am proud to say that they are improving wonderfully in the way of cleanliness, both in their homes and personally. In most cases their homes are scrubbed regularly, and bedding aired daily.

The sanitary precautions recommended by the department have been enforced as far as possible.

All the Indians live in teepees during the summer.

Dr. Lafferty makes frequent visits to the reserve, prescribing for those who need his care.

Resources and Occupations.—The resources of these Indians are timber, cattle, horses, furs and bead-work, also odd jobs for ranchers.

Last year they realized from the sale of dry wood $4,750, cattle $1,536.50, horses $1,500, furs, approximately, $3,000, and bead-work $800, which is practically a new industry, the articles being sold mostly at Banff for tourist trade. They have also built ten miles of fence around the southeast corner of the reserve. This is a three rail and two wire X fence; the timber for this fence had to be hauled from three to ten miles over a very hilly country. Owing to the very heavy rains, we have had to do a lot of road-repairing to enable them to get to the timber. In this I have assisted them with extra rations.

Buildings.—Nearly all the houses have shingled roofs. There have been seven new ones erected this year, all of hewn logs, shingled roofs, floored, and in some cases ceiled; good large windows; the material for which has all been purchased from the proceeds of their beef.

Stock.—The stock has done well this year, there being no losses to speak of.

When I took charge in May, 1900, there were four hundred and seventeen head, they have now six hundred and thirty-seven after slaughtering one hundred and fifteen, leaving an actual increase of two hundred and twenty head, and now with the fencing of the reserve and growing more green feed, I expect to have less loss than there has been in the past.

The cattle are small, but with care in breeding and better care with the calves the first winter, I expect to bring them up to the average weight.

The horses here are a very good breed of cayuse, and with the use of good stallions I hope to turn out a horse that will sell for $50 or $60.

Farm Implements.—Of these they have sufficient for all the farming done, wagons being in greater demand, as they cannot make anything out of their wood without a wagon. I have purchased eight new wagons since last June, which have been paid out of proceeds of beef and wood. The harness is all bought from the traders and is paid for in wood.

Education.—The McDougall boarding school has been accommodating an average of forty-two pupils during the year.

Principal Niddrie and the boys have renewed all the fences and corrals, and everything has a very tidy appearance.

No. I day school was opened last January and has been running ever since, with a fair attendance, thus giving those who could not go to the boarding school a chance to be educated. There have been no day schools on this reserve for four or five years.

Religion.—These Indians are all Methodists. Rev. R. B. Steinhauer is the missionary in charge. He keeps them well under his influence.

Characteristics and Progress.—These Indians are improving in the way of spending what money they earn more judiciously, and in most cases are bettering their condition. It is very hard to instil into them any sense of independence or gratitude for what is being done for them by the department.

Temperance and Morality.—No cases of intemperance have come under my notice.

With the exception of a very few, these Indians lead very moral lives.

General Remarks.—Last summer I had thirty-six acres broken, which was put in with rye, which is doing very well; and seeded down the twenty-five broken the year before with brome, which is proving very successful.

The Indian Commissioner visited this reserve in April, and his talk with the Indians has had a good effect on them. They took the enlargement of the Banff National Park very hard, as it took in nearly all their hunting ground.

I hope it will be for the best, for as long as there was any game so close to the reserve, it was hard for them to get down to work.

I have, &c.

H. E. SIBBALD,
Indian Agent.

NORTHWEST TERRITORIES,
ASSINIBOIA—TOUCHWOOD AGENCY,
KUTAWA, July 7, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of this agency for the year ended June 30, 1902.

Reserves and Tribes.—There are seven reserves in this agency, viz. :—

Muscowequan's, No. 85, Saulteaux ; George Gordon's, No. 86, Poor Man's, No. 88, and Day Star's, No 87, all Crees ; and Fishing Lake, No. 89 ; Nut Lake, No. 90 ; and Kinistino's, No. 91. These last three reserves belong to Yellow Quill's band, the members of which are Saulteaux.

The reserves immediately around the agency headquarters are situated in townships 26 to 29, and ranges 14 to 17, while the Indians of Yellow Quill's band reside at a distance as follows : they consist of three small bands, viz. : Fishing Lake, residing fifty miles away ; Nut Lake, one hundred miles distant, and Kinistino, one hundred and sixty miles north from the agency headquarters, and all situated in townships 33, 38 and 30, ranges 12 and 13, excepting Kinistino's reserve of fifteen square miles in townships 41 and 42, range 15, all west of the second initial meridian.

Gordon's and Muscowequan's reserves are located in the Little Touchwood hills ; Day Star's and Poor Man's in the Big Touchwood hills. The agency headquarters are situated on section 16, township 28, alongside the old main trail leading to Duck Lake and Prince Albert. The agency headquarters are sixty miles from Fort Qu'Appelle, eighty miles from Qu'Appelle station, on the Canadian Pacific railroad, and seventy-five miles from Regina.

The Dominion telegraph office is three hundred yards from this office, and the same from the post office, where we receive our weekly mail. The mail comes here on Saturday and leaves on the next Wednesday, every week.

The total area of the seven reserves is one hundred and twenty-two thousand nine hundred and eighty-six acres. About thirty-two thousand of this is covered with willow scrub, small bluffs and timber. Our nearest stream is the Qu'Appelle river, sixty miles away at the nearest point. On the reserves are numerous ponds, creeks and rivers and small lakes. The Fishing and Nut lakes and Barrière river are the only ones that contain fish.

Vital Statistics.—The population of this agency is as follows : two hundred and forty-seven men, two hundred and seventy women and three hundred and thirty-five young people under twenty-one years of age, making a total of eight hundred and fifty-two souls. There were forty-two births and twenty-four deaths.

Seventy-five Indians left the reserves and seventy-seven entered the reserves, making an increase of twenty souls during the year.

Health and Sanitation.—The general health of all the seven bands has been good, consumption being the cause of what sickness we had.

We had small-pox on Gordon reserve, but owing to the admirable manner in which the quarantine was kept by the Northwest Mounted Police and the success Dr. Carthew had in handling the cases, it was confined to one family; all the reserves surrounding the agency headquarters were under quarantine for something over two months. This, however, was a great draw on the food supply, which is a comparatively small extra expense to what it would have been had the disease been allowed to spread.

Resources and Occupations.—The Indians in this agency have very few chances of earning money, as all work done for traders, freighting, supplying wood and hay, must always be taken out in trade, and the freighting of supplies for the agency. The supplying of what little hay and wood is required at the agency headquarters is paid for in rations from the department's supplies.

Cattle-raising is the most reliable occupation at present, although some of the reserves are well adapted for farming, and in the near future, when we have a mill and market within reasonable distance, there will be more inducement to take up farming; at present, the nearest point to market grain is eighty miles and some of the reserves one hundred miles. We have a much greater acreage this year than last, and the Indians are preparing the land this year for a still greater acreage next year, and I have no hesitation in saying that large quantities of all kinds of grain could be profitably raised, and the more advanced Indians see this and are steadily preparing themselves and advancing with the time, and are purchasing improved farming implements of all kinds so as to be able to keep abreast of their white brothers.

Characteristics and Progress.—Amongst many improvements on the different reserves, I may mention one or two cases. Day Star's reserve has no chief, but an Indian called Kenequan is the recognized head by the band. This Indian for some reason had been rather dilatory and dissatisfied for some time back, but the past year he has taken great interest and tries to encourage his men in a practical way by doing good work himself; during the past year he has built a large octagon stable, capable of holding a hundred head of cattle, all made of good timber nicely hewn, and the building well finished and complete in every respect; also a large cattle corral with a double chute for branding stock. He has a large, commodious house, well finished and with a good large open fireplace, which I consider for sanitary purposes much preferable to stoves; and by setting the example, the other Indians of this band have built good large octagon stables and made various other improvements.

The Indians are industrious and law-abiding, and are getting better off and becoming cleaner in their surroundings.

Buildings.—The buildings at the agency headquarters are in good order and condition.

On all the reserves houses and stables of a better class have been built, especially at Fishing Lake reserve, and they have been kept cleaner.

Stock.—The cattle are improving in quality, the result of thorough-bred bulls. We have also quite a number of good heavy horses. They are purchased by Indians from proceeds of beef sold.

Farming Implements.—The Indians are well supplied with ploughs, harrows, mowers, and rakes, and the most advanced Indians have purchased the latest improved farming implements of all kinds, and these are their own property.

Education.—There is a day school at Day Star's reserve and well attended, with fourteen names on the roll, being all the children on this reserve of school age. Progress is fair and attendance regular. The parents are greatly interested in the education of their children. Mrs. Sarah M. Smythe is in charge of the school and gives good satisfaction with the girls. On Gordon's reserve there is a large stone boarding school conducted by the Church of England, Mr. and Mrs. Mark Williams being respectively principal and matron. The government grant is for thirty children and they have the complement. The children are well looked after, are happy and contented, and the progress made is favourable. The buildings inside and out are always kept scrupulously

clean and tidy. The pupils are well dressed and clean at all times. The boys are taught farming, gardening and stock-raising. The girls are taught all the duties in connection with keeping a house properly, mending and sewing, cooking and baking a specialty, so when discharged they are thoroughly competent to take charge of a house and manage it economically. At Muscowequan's reserve there is another boarding school; this is also a very large stone building, and is under the auspices of the Roman Catholic Church. The principal is Father Jacob. The work of a matron is looked after by three Sisters of Charity, the school by Sister Valade, and the outside work by a lay brother. There are thirty pupils at school, which is the complement. The same remark as to the different branches taught, the cleanliness of the children, the good condition of the buildings and surroundings in Gordon's school, applies here.

Windmill.—At Muscowequan's boarding school they have a windmill with which they saw fire-wood, make lumber, crush grain, and pump water to the main building, saving time, labour and money, in fact, it takes the place of a gasoline engine, and with no expense to the institution and answers the purpose very well.

Religion.—There are but two denominations working here amongst the Indians, the Church of England and the Roman Catholic. However, the majority are still pagans and attend to their old pagan ceremonies quietly, but they have abandoned their feasting ceremonies.

Temperance and Morality.—I am glad to say that no case of intemperance or immorality has come under my notice during the past year.

I have, &c.,

H. MARTINEAU,
Indian Agent.

REPORT OF J. LESTOCK REID, D.L.S.

PRINCE ALBERT, SASK.,
November 25, 1901.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report of my past season's work, in compliance with your instructions of April 22 last.

The first work of the season was the sub-division survey of the Pheasant Rump and Ocean Man's reserves, and, following your instructions, I projected the adjoining system of Dominion Lands Surveys through these reserves, and was guided by the 'Manual of Survey' prepared by the Department of the Interior.

Having completed this survey, I moved my party to the White Bear's reserve, and ran round and marked the boundaries of the same, finishing by the first week in August. Acting on instructions from the Indian Commissioner, I made a survey and took the levels of the Big Meadow on White Bear's reserve, and have submitted the plan and field-notes of the same. I may mention that from casual observation there appear to be a number of sloughs or meadows on this reserve that if drained would give a large quantity of hay.

From the Moose Mountain I proceeded to the Sioux reserve, near Oak lake, and sub-divided a portion of the same.

From the Sioux reserve I moved my party to the Assiniboine reserve, No. 76, near Indian Head, and ran round and marked the boundaries, completing the survey by September 12.

Having received instructions from the Indian Commissioner, I moved over to the Qu'Appelle valley, and ran the dividing line between Muscowpetung and Pasquah's reserves.

This completing the season's operations, the party was disbanded.

I have, &c.,

J. LESTOCK REID.

REPORT OF A. W. PONTON, D.L.S.

SURVEYS IN MANITOBA AND NORTHWEST TERRITORIES,
OTTAWA. January 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report of the past season's work in connection with Indian reserve surveys.

I left Ottawa on May 3, for Winnipeg, where I reported myself to the Indian Commissioner.

On May 10, I proceeded to the Blackfoot reserve, where I was engaged until the 27th of the month, as follows:—

An examination was made of the coal seam on the south bank of the Bow river, five miles below Blackfoot crossing, known as the Calf Bull mine, with a view to obtaining information in connection with the transportation of the coal across the river by means of a wire cable tramway. A report was prepared and submitted to the Indian Commissioner.

Roads were located at both the north and south camps, with a view to overcoming the present difficulty which is found in hauling heavy loads over the hillsides bordering the valley of the river.

A drainage ditch was located and excavated under my personal supervision in connection with irrigation at the north camp. This ditch is intended to drain a slough, three hundred acres in extent, situated on the irrigated bottom-lands, and it is expected that five hundred tons will be added to the yield of hay from these lands.

I visited the Stony reserve at Morley, with the intention of supervising the construction of an irrigation ditch which has been under consideration for some time. I found, however, that the work could not be proceeded with at once, owing to the absence of Indians from the reserve, which was partly due to the usual spring hunt, and partly to the fear of small-pox.

An inspection was made of the sewage arrangements at the Calgary industrial school, which have been found defective. A report was submitted to the Indian Commissioner suggesting certain alterations.

I next proceeded to Edmonton, where supplies were purchased and arrangements made for transport to Lesser Slave lake. After much delay owing to incessant rains and the consequent bad condition of roads and the high state of water in the rivers travelled, Lesser Slave lake was reached on July 10. On my arrival, I was still further delayed by the absence of Chief Kinoosayo, but on his return, the question of the location of the reserves was gone into.

SARCEE INDIANS REPAIRING BRIDGES, SARCEE RESERVE, NEAR CALGARY, ALTA.

The survey of a reserve for Chief Kinoosayo and his immediate followers was first taken up. This reserve, comprising 21·1 square miles, is situated on the south side of Lesser Slave lake, and on a point through which Drift Pile river winds before entering the lake. The reserve is well situated for agriculture or stock-raising, and contains much fine timber.

A survey of a reserve was made at Sucker creek, comprising 17·35 square miles, for Headman Moostoose and his followers. This reserve is situated on the south side of the Narrows between Lesser Slave lake and Buffalo lake. The country is level and generally low. Good farming land is found along Sucker creek, and large hay meadows occur along the shore of the lake. Good timber—spruce and poplar—is also abundant.

Three small reserves were surveyed on the shores of Buffalo lake for the following families, viz. :—

No 19. Widow Freeman.
No. 74. John Pakashan (La Bouteille).
No 40. Thomas Halcro.

The following reserves have still to be surveyed, viz. :—

5 square miles at the Narrows.
5½ square miles at Assineau river.
5 square miles at the foot of the lake.

I am hopeful that the Indians living at these points will yet decide to take a reserve together at Swan river, where there is better agricultural land than where they are now located.

From Lesser Slave lake I returned to Edmonton, where I received instructions to proceed to the Onion Lake agency, to survey a timber berth for the use of Indians of that agency.

Taking a canoe at Edmonton, I followed the Saskatchewan river down stream. On my arrival at Onion Lake agency, I selected and surveyed a block of timber lying immediately east of the 4th meridian, and north of Seekaskootch reserve, No 119.

From Onion Lake agency I proceeded to Winnipeg, and after reporting to the Indian Commissioner, returned to Ottawa on November 22.

Separate reports will be prepared in connection with the different subjects referred to above, and submitted in due course.

I have, &c.,

A. W. PONTON,
In charge of Surveys in Manitoba & N.W.T.

REPORT FROM
INSPECTOR FOR TREATY NO. 8,
OTTAWA, October 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of my summer trip to the northern part of Treaty No. 8.

I left Edmonton on April 25, and, owing to the very wet weather, the trip was dangerous and difficult. We had to swim the horses through all the small streams that the year before were comparatively dry, and, owing to the very heavy snow and rain storms *en route*, I took an attack of rheumatism at Spirit river which rendered me unable to ride for a few days. I was, therefore, compelled to arrange to have my assistant go to St. Johns to pay the annuities to the Indians at that point. He arrived eight days after the date fixed. But taking into consideration the exceedingly bad weather, this was not an undue delay, and the Indians waited the officer's arrival. I am pleased to be able to report that I was at every other point on the days fixed for the payment of annuities.

The number of Indians paid this summer was 2,683, a small decrease from last year, owing to a number not coming in to receive annuity. The absentees belonged principally to Fond-du-Lac, and were engaged in hunting deer.

The Indians throughout the whole district are fairly healthy and contented and have had a very successful hunting season. Fur was plentiful and brought good prices. One small band at Peace River landing are farming on a small scale and would like to have a reserve surveyed in the near future. Their headman had seventy acres of crops sown this year. The Lower Hay river Indians appear to have made marked improvement last year over any other band in the way of building houses and fencing off plots for gardens. The houses are good and comfortable. I think there were seven new ones built last summer, making twelve altogether, each of which has a plot of ground fenced off, growing potatoes and other vegetables, which adds considerably to their comfort.

I shall make a separate report as to what should be furnished these Indians under the treaty in the way of implements, &c.

The Indians on the north side of Great Slave lake are anxious to come into treaty, as are those of Providence on the Mackenzie river. They claim that the Slaveys and Yellowknives, who were taken into treaty in 1900, have hunting-grounds outside of treaty and are akin to them.

The supplies furnished by Messrs. McDougall & Secord were in every way satisfactory.

I have, &c.,

H. A. CONROY,
Inspector for Treaty No. 8.

NORTHWEST TERRITORIES,
BATTLEFORD INSPECTORATE,
MIDDLECHURCH, MAN., September 22, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report on the inspection of Indian agencies and reserves in this inspectorate for the fiscal year ended June 30, 1902.

BATTEFORD AGENCY.

The month of July, 1901, was occupied with the affairs of the Battleford agency, particularly the annuity payments and the installing of Mr. J. P. G. Day as agent.

New Agent.—Apart from many personal qualifications for his office, Mr. Day is an old resident of this locality, and has a practical knowledge of the conditions and methods of the two principal industries of these reserves, namely, agriculture and stock-raising; and the results of his management down to the present justify a high expectation for the future.

Annuity Payments.—The pay-sheets of this agency are in good order, and few difficulties were encountered in connection with the payments. No licenses have been granted for trading on these reserves, and in consequence the Indians assemble in town immediately on receipt of their money to make their purchases at the general stores. On this occasion the different bands received their annuities at slight intervals in order to avoid too great a crowding in the stores, so that their wants might be better served, and that they might be able to make their purchases to better advantage. The results were satisfactory; the stores were provided with every serviceable line of goods, and the Indians received fair value for their money.

Inspection.—The regular inspection of the agency was made in February and March.

MOOSOMIN'S AND THUNDERCHILD'S BANDS.

Reserves.—These reserves were inspected on February 3, 4, 10 and 11. They are in charge of Moise L'Heureux, who was appointed to these duties in August last.

Health.—During the winter the health of the band was extremely bad. There was sickness in nearly every house, and eighteen deaths occurred, chiefly from pneumonia and diseases due to exposure, and to measles, which had been prevalent.

Industries.—Work was for the time at a stand-still, but throughout the summer and fall the industries had been followed up with such success that many of the Indians were in confortable circumstances. Grain and root crops were fairly good, the straw was stacked in a shape convenient for use if required, and a good supply of hay was secured. On account of the sickness of the Indians, the cattle at the ranches received but poor attention, but owing to the mildness of the winter they required less care than usual, and through this circumstance combined with the watchfulness of the farmer all danger of loss was averted.

Duties of Farmer.—These two reserves are a heavy charge for a farmer, and the difficulty of management is increased by the fact that while the Indians all dwell, and the farming is all done, on the south side of the river, the hay is put up and the ranches located on the north side and from ten to twenty miles from the reserves. The division of the farmer's duties is urgently needed with a view to efficiency. Meantime Farmer

L'Heureux has been diligent and tactful in the management of the work of the reserves, which shows not only the results of individual effort but also some useful improvements on the public road leading through the reserves. He has also been judicious in the issue of relief, incurring in this connection, it is true, the displeasure of some of the Indians, which was inevitable.

Farm Buildings.—The farmhouse is a house of suitable dimensions and comfortable, but is in need of a new foundation in order to preserve the building. A new stable is also required.

Poundmaker's and Little Pine's Bands.

Mr. S. Simpson took charge of these bands as farmer in July last.

Health.—These Indians have continued in remarkably good health, notwithstanding that measles went the full round. They appear to have followed the farmer's careful instructions with regard to the care of their sick, with the result that the possible ill effects of the disease were averted. The houses were with few exceptions found in a clean and sanitary condition, except that here, as elsewhere in the agency, measures for disinfection were generally neglected.

Industries.—These bands reaped a large harvest, which showed a good yield and a great improvement in sample and in freedom from dirt. Considerable preparation was made last summer for this season's crop by way of breaking new land, summer-fallowing, and stubble-ploughing. The Indians' herds show a steady increase. Nearly half their cattle were wintered on the reserve; and these were cared for with much greater regularity than those wintered at ranches abroad. The straw was stacked at threshing in a shape seldom seen in this country. The stacks were large and well shaped, so that cattle could feed about them and take shelter but not trample them down.

Buildings.—With a portion of the lumber cut at Birch lake in the summer of 1901, though it had to be freighted about ninety miles, two comfortable houses were completed on Little Pine's reserve, and floors and bins were made in several granaries, preventing much of the loss that was sustained in former years through exposure of the grain.

Sweet Grass' Band.

The farmer on this reserve is Mr. A. Nolin, who assumed charge in July last.

Health.—A few deaths occurred among the members of the band, but otherwise the general health has been fairly good. The houses show a gradual improvement as regards cleanliness and furniture in harmony with a steady advancement in the general well-being of the occupants.

Industries.—This reserve had a large yield of grain of good quality, the wheat especially being an excellent sample and free from smut and dirt. A large area of new land has been broken up in an open tract, sloping to the south, fertile, and favourable for the maturing of crops. A good supply of hay was secured, all on the reserve, but at a distance of about four miles from the stables. The cattle were in good condition and numbered about three hundred head Hogs also are kept by most of the Indians of this band, and, as feed is plentiful, much profit is found in the industry. In connection with their industries the progress of the members of this band is most satisfactory, owing largely to the smallness of their number, which admits of the farmer devoting a great share of attention to their work individually.

Red Pheasant's and Stony Bands.

The farmer at present in charge of these bands, Mr. R. Jefferson, entered upon his duties in July last.

Farming.—A series of misfortunes rendered last season's agricultural operations quite disappointing. The crop was fairly large and promising, though part of it was

damaged and part almost destroyed by frost owing to late sowing. But owing to scarcity of work-horses, breakage of implements, and other unforeseen causes, it was not until the middle of October that cutting was completed, the latter part of the work being attended with heavy loss. Further, on account of the heavy crop in other parts of the agency, the threshing outfit did not reach these reserves until spring, and the Indians were in the meantime obliged to buy their flour.

Other Sources of Income.—These bands realized considerable from the sale of musk-rat skins, and from the freighting of the agency and industrial school supplies from Saskatoon to Battleford, a large part of which they did, being more conveniently situated for this purpose than the other bands. The Stonies continue to earn a portion of their livelihood most laboriously by the sale of hay and wood, which they haul to town, a distance of twenty miles, for a small price.

State of Progress.—So far as industries are concerned these bands are in a decidedly unprogressive state. Their cattle show a slight decrease ; their horses are decreasing in number and not improving in quality ; they have been unsuccessful in the raising of sheep and hogs, while in the growing of grain and roots but little improvement has been made, notwithstanding the increasingly favourable conditions of recent seasons.

General Remarks.

Indians' Debts.—The general prosperity and improved management of the Indians of this agency are well indicated by the fact that their debts in the Battleford stores, which two years ago amounted in the aggregate to a considerable sum, are now almost wiped out.

Purchase of Implements.—From the proceeds of the sale of beef and fat cattle, which this year amounted to upwards of $8,000, a few essential implements have been added to the equipment of the reserves. These are mainly ploughs and wagons, and have for the most part been paid for by the Indians individually, the method of holding implements and stock in common having long since been found a failure.

Horses.—The Indians stand in urgent need of a better class of horses. Such work as reaping, mowing, and the hauling of grain to market and to mill, cannot be done to advantage with oxen. The price of horses has gone up so high that the Indians are unable to buy, and little has been done as yet to improve their stock by breeding.

ONION LAKE AGENCY.

This agency was inspected in December last.

Staff.—Mr. W. Sibbald is in charge of the agency, and has the assistance of Mr. L. Lovell as farmer and engineer, and Mr. T. J. Slater as stockman.

Population.—Of the several reserves included in this agency only two are regularly occupied, namely, Seekaskootch and Makao's, which are situated adjacent to the agency headquarters, and whose inhabitants number about three hundred and fifty, and belong to several different bands.

Sanitary Matters.—During the summer of 1901 a few houses were burned, some of whose occupants had been affected with a disease resembling small-pox. Suitable compensation was made to the owners, and preparations were made to replace these the following spring with houses of a better class. In several instances new houses, though of a very indifferent class, have been built by Indians who desired to change their location for convenience in the pursuit of their industries. The fact that such changes of location are necessitated frequently, owing to the changed conditions brought about by the varying seasons, is a discouragement to the building of dwellings of an improved and permanent description ; yet from a sanitary point of view at least, the abandonment by Indians of their old places of abode for new ones with fresh and healthy surroundings has a salutary effect even where no improvement is made in the size and structure of the dwellings.

Agriculture.—Due advantage was taken of the favourable season in order to make a fresh start in the direction of grain-growing, which some years ago flourished on these reserves. The Indians have this year a good supply of oats and barley, with some to sell, for which there is as usual a good demand; and have from their wheat about two hundred sacks of flour, besides a liberal supply of grain reserved for seed. The crop of potatoes was good, but of other roots and vegetables there was but a scanty supply on hand even at the beginning of winter, owing chiefly to neglect of cultivation.

Indians' Cattle.—There is a net increase of eight head in the Indians' herds in the past two years. The cattle are well branded, two strong and commodious corrals with convenient chutes having been built for this purpose at the most favourable points on the reserve.

Government Herd.—There has been a heavy decrease in the herd of government cattle here in the past two years, amounting, in fact, to 20 p. c. net. This is due to a small natural increase, to losses through straying and other causes, and to a heavy demand upon the herd for the agency beef-supply, in connection with which it was found necessary to beef at a great disadvantage many cows and young steers. It will in consequence be necessary for some time to come to buy beef from the Indians for the agency supply, which has for some years past been obtained from the herd alone.

Winter Quarters.—Hitherto the winter ranches for the herd have been at Long lake, where five large stables situated at convenient points throughout the extensive hay-lands afforded comfortable shelter. Last season, however, on account of excessive rains, these meadows were submerged to such an extent that it was found necessary to remove the ranches to the south side of the river, where a fair supply of hay was secured and such preparations made for winter as were possible within a short space of time. As the winter proved mild, the stock did not suffer seriously.

State of Civilization.—Notwithstanding that the Indians of these reserves are mostly Christianized, yet under the influence of less civilized Indians who live in considerable numbers at Frog lake and Island lake not far distant, there is a strong tendency to revert to heathen customs. These, it is true, are steadily discountenanced by the missionaries and suppressed where possible by the agent.

Agency Office.—All records are kept by the agent personally, and with great accuracy.

Buildings.—During the past year the agent's house has undergone considerable repairs, and a new and comfortable dwelling has been built for the farmer.

SADDLE LAKE AGENCY.

This agency was inspected in January.

Staff.—The agency staff consists of Mr. G. G. Mann, as agent; Miss B. E. Mann, as clerk, and S. Whitford, as interpreter.

Saddle Lake Band.

The reserve of this band is in charge of Mr. J. Batty, who was appointed to the position some years ago.

Population.—The population consists of two almost distinct bands, namely, Little Hunter's and Blue Quill's, the former occupying the eastern portion of the reserve around the Saddle lake, and the latter the western and smaller section.

Houses.—Five of the young men of the reserve have built very comfortable houses, that of Thomas Mahkokis being particularly well finished and equal in most respects to a well-to-do settler's dwelling. The interior also of the houses was in many instances very creditable.

Agriculture.—The crops of the past season were tolerably good, and although there was a slight decrease in the acreage sown, yet the aggregate yield was much

larger than in the preceding season. Augustine Steinhauer had three hundred and twenty bushels of wheat and six hundred bushels of oats. He was keeping twenty-four hogs, and for their feed he had a quantity of this grain chopped at the agency crushing mill, which was called into requisition for the first time. The equipment of ploughs is insufficient, those on hand being for the most part badly used up.

Live Stock.—The Indians' herds show a considerable decrease, due to larger sales for the purchase of implements and to the practice, which is far too general here, of killing yearling and two-year-old animals for beef.

Other Resources.—As elsewhere throughout these northern regions, the hunting of the musk-rat has latterly afforded some profit to a large number of the Indians. Many here continue to devote their time to freighting for the traders and for the missions, even at the sacrifice of their farm work. A few follow trading, alone or combined with other pursuits, one or two with some degree of success, but others with loss to themselves and to the merchants who supply them.

Whitefish Lake Reserve.

This reserve is in charge of Mr. P. Tomkins, who has been for many years in the service of the department, and formerly occupied a similar position in the Battleford agency. Mr. Tomkins has the advantage of being able to speak the Cree language very fluently and correctly.

Crops.—The yield of grain was fair and the sample excellent. Farming, however, is not extensive; the fields are mostly small patches, and only five acres of summer-ploughing was done on the entire reserve.

Cattle.—Here also there is a decrease in the Indians' herds, due to the same causes as at Saddle Lake reserve, with the addition of a slight loss in connection with the wintering.

Grist-mill.—The grist-mill is in charge of Mr. T. McGee, who performs the duties of miller and engineer for both the Saddle Lake and Edmonton agencies. A new run of stones of increased capacity has recently been put in, and although the work being done was far below the full capacity of the stones, yet the product was at least of satisfactory quality.

Agency Office.—With the exception of the live stock records, all books were found complete and accurate. Punctuality is observed in connection with all agency business.

Agency Buildings.—A new storehouse, which was much needed, has been erected at the agency; also a new horse-stable and an implement-building. The buildings throughout are arranged with a view not only to convenience, but also to appearance, in keeping with the naturally picturesque site of the agency headquarters.

CARLTON AGENCY.

In October last I made a brief inspection of this agency.

Staff.—The officers of the agency were as follows: W. B. Goodfellow, agent; T. E. Jackson, clerk; Rupert Pratt, interpreter; Wm. McBeath, farmer at Sandy Lake; Patrick Anderson, farmer at Sturgeon Lake; James Dreaver, farmer at Big River; P. Garnot, overseer of Meadow Lake reserve.

General Remarks.—The work throughout this agency could not be said to be in a state of thorough efficiency in any respect. The Indians' herds were so reduced that it was becoming difficult to obtain from them the agency supply of beef. In yield and quality the crops for the season were fair, but the acreage was diminished, several Indians having abandoned their farms, while some had disposed of their stock and other effects and left the reserve. The three reserves on the east side of the Shell river namely, Sturgeon Lake, No. 101, Little Red River, No. 106A, and the Wahspaton Sioux reserve, No 94A, received practically no attention: their grain was cut with a hired binder, and remained unthreshed.

It must be said, however, that the management of this agency has of recent years become a heavy task, owing to the location and settlement of three new reserves, while the older reserves, though somewhat advanced, require in some respects increased attention, owing to the growing importance of their industries.

Moose Woods Band.

This band is in charge of Mr. W. R. Tucker as overseer. The reserve was inspected in March.

Reserve.—The reserve consists of a little less than six sections, and is situated on the east side of the South Saskatchewan, about eighteen miles above Saskatoon.

Tribe and Population.—These Indians are Sioux and number about fifty souls.

Cattle.—Their cattle continue to be their chief wealth. From these they have their beef-supply and have realized during the past year $1,200 in addition. They had on hand in March a good supply of excellent hay, their stables were warm, and the cattle were in a thrifty condition.

Other Resources.—Their earnings are supplemented by the sale of wood and hay, by wintering cattle for settlers and buyers, by the sale of musk-rat skins and other furs and by their own handiwork.

Management.—There has been a steady advancement in the prosperity and civilization of this band for many years past. The main defect in the management consists in the fact that the Indians are allowed to spend the greater part of their money before it is earned. This, it is true, is only for the purchase of necessities, and it must be borne in mind that these Indians are differently situated from the Crees, who have their annuities, and as a last resort, the supplies for the destitute, to help them out in time of hardship.

Northern Bands.

As usual for a few years past, I made during August and September, the annuity payments to the hunting bands throughout the northeastern part of Saskatchewan.

Location.—These bands are not located on reserves, but have their headquarters at or near the chief trading posts of the region, namely, William Charles' band at the south end of Montreal lake, James Roberts' band on the west shore of Lac la Ronge, and Peter Ballendine's band at Pelican Narrows. The two last named points are on the northern verge of treaty limits, and the abodes of the Indians are scattered over a very large area, being in some instances quite outside of treaty limits, the Indians in such cases having been admitted to payment merely on the ground of their being identified with these bands.

Chief Appointed.—To fill the place as chief of James Roberts, who died during the year, Amos Charles was appointed, and he being already a councillor, David Marastay was appointed in his stead.

Livelihood.—A number of Indians whose homes are on the Churchill river and who hunt far north from there, have had a very successful season's hunting, securing a considerable number of beaver, otter, marten, fisher, an occasional wolverine, and a few valuable foxes, besides moose and caribou. A good hunter secured from $500 to $800 worth of furs, besides an abundance of meat. South of the Churchill, beaver are becoming very scarce, while otter, marten, and fisher are more uniformly distributed and show less tendency to extinction. Some animals, whose tendency to become more and less numerous alternately by periods is commonly explained as due to migration, such as bears, lynx, foxes, and rabbits, though still scarce, show indications of increasing. Hardy hunters are still able to make a good living by the furs they take, while for the feebler the deep, clear lakes and their connecting streams abound in fish of the best quality.

DUCK LAKE AGENCY.

A partial inspection of this agency was made in April, the work being interrupted by the breaking up of the river, which prevented a visit to the reserves on the east side.

Staff.—The agent, W. E. Jones, has besides an interpreter, the following staff of officers :—J. H. Price, clerk ; and J. S. Letellier, Louis Marion and A. J. McKay, farmers.

Agency Office.—All office work is done with promptness and accuracy.

Beardy's and Okemassis' Reserves.

General Remarks.—Some distinct improvements are noticeable in the houses of the Indians. The agricultural industries are being followed up with a fair degree of success. A few of the Indians are becoming quite independent through their stock and their grain. One of the most encouraging features is the success attending the work of a few of the younger men, who are ex-pupils of industrial schools.

On April 23, by direction of the Indian Commissioner, I left Prince Albert for Middlechurch, Man., to take charge temporarily of the Rupert's Land industrial school.

I have, &c.,

W. J. CHISHOLM,
Inspector of Indian Agencies.

Manitoba and the Northwest Territories,
Office of the Indian Commissioner,
Winnipeg, October 15, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my report for the past year upon Indian affairs in Manitoba and the Northwest Territories.

I am pleased to be able to state that the year intervening since my last report has been the most prosperous ever enjoyed by the Indians in my jurisdiction. The good yield of grain and the favourable returns for live stock in 1901 encouraged most of the bands to increase their crop acreage and their herds in the present year, with the most gratifying results. Several bands, however, are non-progressive : in some cases where old men retain their influence, and in others the attractions of the hunt hinder the advance of the wards of the government in the industries of civilized life. It is the old story of divided allegiance ; we cannot hope to make successful farmers or artizans out of those who follow the chase at every opportunity.

Agriculture.—This is the great industry for the prairie country. The plain Indians, when the buffalo disappeared, had no means of subsistence and became a burden on the government. Strenuous efforts were made to induce them to take up agriculture and stock-raising ; and though progress was slow and the ration-house is yet too much in evidence, great advances have been made towards self-support. Those Indians who adopted mixed farming have been most successful. Four agencies, three of them including several reserves, will be able this year to supply their own flour and vegetables, and nearly the whole of their beef. These agencies are Birtle, Qu'Appelle, Crooked Lakes

and Assiniboine. Duck Lake has almost reached the same position. The Qu'Appelle and File Hills Indians will have about 70,000 bushels of grain, mostly wheat, and will consequently have several carloads to dispose of. Birtle agency will thresh about 35,000 bushels and Crooked Lakes about 25,000 bushels of grain. The two former agencies will be able to pay with their surplus grain and cattle large instalments on the new machinery which they have obtained, the Qu'Appelle Indians having purchased several binders and a seventeen horse-power engine and separator, and the Birtle bands fifteen new binders. To show that some of the Indians realize they must imitate the white man's push if they would succeed, I may note that Agent Aspdin of the Assiniboine reserve in his September report says : 'The Indians made energetic efforts to get the grain cut before the frost came. Their two binders were cutting many times both by day and by night, as there was a good moon to work by ; and as soon as one Indian's ponies got tired working in the binder, another Indian would hitch and go on with the work'. The same agent also reports that his Indians bought with the proceeds of their industries last year articles to the value of over $1,310, among which were four new wagons, five binders, one seed-drill, fifteen factory bedsteads and four cooking stoves.

While the Indians on the above-mentioned reserves have worked to some purpose in regard to this year's crops, they have not neglected preparing for the future. In the Qu'Appelle agency 1,155 acres of new land have been broken up ; in the Birtle agency over 300 acres, and in the Assiniboine agency 225 acres. As breaking costs about $3 per acre, these Indians have added a considerable value to their improvements.

On the greater number of reserves, however, where mixed farming is attempted, through neglect or misfortune the Indians have not made a very good showing. At the Hobbema agency on August 23, there was a heavy hail-storm which the agent reports damaged the crops in the Indian fields to the value of thirty or forty per cent. The same storm did serious damage on Alexander's reserve in the Edmonton agency. In the latter agency though most of the Indians are backward, those on Michel's reserve have a fine crop of grain and those on Enoch's reserve have broken up 250 acres of new land.

Stock-raising.—In Treaty 7 where farming has not been successful owing to climatic conditions, the principal industry is stock-raising. The business upon the whole is prospering. A considerable number of young stock, however, were lost by the sudden and unusually high floods on the tributaries of the Belly river and on the Bow river in the past season. Agent James Wilson of the Blood agency writes : 'During the first three days of July a most severe rain-storm came on, and the land being already saturated with water from the May floods, creeks and rivers soon began to rise and by the afternoon of the 3rd, had reached a height never previously known.... Houses were flooded—some eight being carried away entirely ; stables and corrals were taken down stream—even mowers were washed away, while rakes and hay-racks were knocked about like pieces of matchwood.... Cattle during the first day of the rain had drifted into the bottoms for shelter and in a good many cases were caught there and had with difficulty to be removed. Some Indians lost heavily.... My returns show that of the older and branded stock some twenty-nine head were drowned ; but our heaviest loss during the two storms was in young unbranded calves.' Notwithstanding these losses, the increase was fairly satisfactory, the first calf-brand on the Blood reserve for this season being 597. With the heifers supplied by the department this spring, some twenty additional Blood Indians have taken charge of cattle under the loan system, making a total of one hundred and seventy-seven individual cattle caretakers with some 3,200 head of cattle. At the August round-up on the Peigan reserve, 1,423 cattle were seen, and the calves branded were 370 head, a number, Agent R. N. Wilson says, considerably short of what would have been branded had not so many perished in the storm and flood of May last. On the Blackfoot reserve 209 heifers were distributed last spring on the loan system and their herds are progressing. On the Sarcee reserve there has also been a fair increase in the number of cattle cared for by the Indians ; and though the Stonies are somewhat backward, owing to their lack of good grazing land, the time seems to be approaching when the Indians of Treaty 7 will have acquired a sufficient number of cattle to live upon the proceeds of their herds and other earnings, and dispense with the ration-house.

In addition to the efforts made to improve the condition of the Indians by increasing their herds of cattle, a movement has been set on foot to induce them to breed a better class of horses. With this object in view the department sent several pedigreed stallions to a number of the reserves this year. It is the intention to continue this aid for some time, because it promises to be a profitable investment, as a suitable class of general purpose horses are always in demand. Agent Markle of the Blackfoot reserve writes: 'There are on this reserve about twenty-five hundred horses of the native or cayuse type, and about five hundred head are annually sold at prices averaging about five dollars each. Last year and this, five improved stallions were placed with this herd of ponies, and the Indians own a few more fairly good sires.... If a success is made of this undertaking, and I foresee no reason why it should not meet with fair success, the Indians will in a few years have a few hundred improved horses to sell yearly.' What is true of the Blackfoot reserve may also relatively be said of the other reserves in Treaty 7, and of several in Treaty 6.

Other Industries.—Besides agriculture and stock-raising, there are several other industries of civilized life from which some bands of Indians earn no small part of their support. In addition to putting up sufficient hay for their own use, the Blackfoot Indians this year cut and stacked hay for the ranchers around to the value of $2,500. They have also coal on their reserve, which they have mined at times in a primitive way; but the agent has recently begun to open a new shaft nearer the railway, from which important results are expected. If he can, as is hoped, put a fair quantity of soft coal on the market during the approaching winter, when fuel promises to be scarce, his Indians will be afforded another valuable means of aiding them to make a living.

The Blood Indians, besides providing hay this year for the necessities of their own cattle, the agency stock, and two hundred and fifteen tons for the keep of the bulls during the winter, filled contracts for over twelve hundred and fifty tons to ranch companies, the Mounted Police and settlers in the neighbourhood. In the Peigan agency saw-mill operations were begun in April and completed early in July. Some 3,281 logs were manufactured into over 340,000 feet of lumber. In the previous year, the cut was a little larger; out of it 93,237 feet were issued to Indians for consumption on the reserve, and 229,729 feet were sold to the public. For freighting this lumber to Macleod and other points the Indians received from $3 to $5 per thousand, payable in lumber to whatever extent they could be induced to accept it for the building of houses for themselves. Six hundred and thirty tons of hay were also cut for contractors.

On Lake Winnipeg fishing has been successful during the past year, and the Indians have shared in the prosperity. Many of them have also had other employment. Agent Semmens reports that their earnings so far as he has been able to compute them amount to $60,000, obtained from labour in the mills, on the steamers and from the sale of fish and fur. In Clandeboye agency, Inspector McColl reports that the St. Peter's band of Indians earns a large revenue in winter by cutting and hauling to market dead and dry cord-wood from the reserve, and the large quantity of hay which cannot be utilized by the band for its own stock. A large source of income is also found in wages earned by working at Selkirk and throughout Lake Winnipeg for the fish, lumber and transportation companies, from whom the Indians receive good wages. Agent Wright of Fort Frances, after completing the payments in his agency on September 6, writes: 'In no reserve was there any destitution, as all those who wish to work can find employment at good wages, and the hunting and fishing are good. There will be very little if any wild rice this season owing to the high water. All the garden crops are good, and plenty of hay has been put up for their stock.'

In the far north in Treaty 8, there is little to report in the way of farming and stock-raising. At Lesser Slave lake and on the Upper Peace river, reserves are being surveyed, and some stock and seeds and implements have been supplied several of the more progressive bands. In a few years a good beginning will doubtless be made by them in civilized pursuits.

Health and Sanitation.—There is very little change in the general condition of the health of the Indians during the year. Consumption is still prevalent. The epidemic of small-pox so widespread last year in the Territories has almost disappeared. A few cases near Prince Albert were successfully treated without fatal results. In Manitoba

the disease broke out last winter in a lumber camp at Bad Throat on Lake Winnipeg among the half-breeds, also near Winnipegosis, and spread to the reserves at Brokenhead, Fort Alexander and Pine Creek, but by enforcing a strict quarantine the disease was confined to each district. The department, however, took the wise precaution of sending a doctor to all the reserves on Lake Manitoba, Lake Winnipegosis and in the Pas agency on the Saskatchewan, as well as to the reserves on Lake Winnipeg and as far as Cross lake on the Nelson river in Keewatin, to vaccinate the Indians and half-breeds. At the time of writing I do not know of a single case of small-pox on any reserve within my jurisdiction. Lately a few cases have been reported at Medicine Hat and at Boundary Creek among straggling Indians, those at the latter place at least having recently crossed from the United States. It was necessary, on several reserves and in a few boarding schools, to quarantine for measles, which were of a severe type and resulted in a number of deaths among children.

Conduct.—Crime, properly so-called, is not common among the wards of the government, and appears to be decreasing. It is true that an Indian named Tom Lemack was tried at Regina last May for the murder of another Indian named Josiah Matouney, or 'O-skin-away,' and was convicted and sentenced to be executed on June 27; but the sentence was afterwards commuted to imprisonment in the penitentiary for life. This, however, was not a recent offence; it was committed about September 17, 1894, near Qu'Appelle on the File Hill trail, and the culprit was a fugitive from justice until early last spring, when he was arrested in Montana and brought to trial with the result above stated.

Two Indians from Crooked Lakes agency are charged with stealing a horse from Moose Mountain. They were arrested, and at latest information received were awaiting trial at Moosomin.

The morality of the Indians as a whole is improving, but in some agencies the progress is very slow. On the reserves around Lake Winnipeg the Indians are proverbially moral. In the Clandeboye agency the morality is generally good; but there are several exceptions—cases of those who desert their wives and take other women to live with them. On some of the western reserves plurality of wives is still found; but the unlawful practice is dying out. The agent of the Blackfoot reserve is glad to report that there have been no plural marriages of late; in fact a number who had two wives a year ago must now be content with one. He is also pleased to be able to say that child marriage has largely decreased during the past year. The same may also be said of all, or almost all, of the treaty Indians in Manitoba and the Northwest Territories.

Intemperance is the one vice among the Indians that can scarcely be said to be decreasing. Considerable vigilance is exercised by the agents and police to suppress indulgence in intoxicating drinks, and though many convictions are secured, yet the facilities for obtaining liquor are so much greater now than in the old days when there were few villages and towns in the country, that it is difficult to make headway in enforcing sobriety. I regret that too many liquor-sellers seem to pay little regard to the strict provisions of the Indian Act to protect the red man against his thirst for strong drink. If in every case where a conviction is secured for selling liquor to Indians, the license of such a violator of the law, if he has one, were cancelled forthwith, it would have a good effect. Heavy penalties also should be imposed upon those who tamper with witnesses, for it is becoming increasingly difficult to secure convictions against illicit selling for the want of evidence, though the fact of intoxication is apparent enough. But on the reserves situated some distance from the railways and towns intemperance is uncommon, for the agents are able to a large extent to guard the Indians against the visits of pedlars.

A vigorous effort was made during the year to suppress illegal dancing on most of the reserves. It was fairly successful in the Manitoba and eastern Territorial agencies. One chief and several headmen had to be deposed, some careful watching done and prosecutions undertaken, but the satisfactory effects were worth the trouble. On the Blood reserve, however, I am sorry to say, a sun dance was held, which was largely attended, over which nearly a month was spent by many of the Indians, though the actual dance lasted for only three days, namely, July 24, 25 and 26. These large gatherings are of a very injurious character; much valuable time is wasted when they

ought to be occupied with their hay-making. I have not ascertained that the illegal features of this dance were at all prominent; but it can scarcely be doubted that besides the loss of time, immorality, gambling and other such evils were practised. A similar dance—the second in five years—was held on the Peigan reserve during the week ended July 12, but the agent reports the ceremony was devoid of objectionable features and nothing worthy of note occurred.

In a few years it may be hoped that these foolish practices will die out; but measures must be taken to hasten their end. They are vestiges of savage life, and while they continue among the Indians of any band, the work of civilizing them must be comparatively at a stand-still. The farming instructor, the teacher and the missionary cannot accomplish much among people who give themselves for weeks together to the excesses of a heathen celebration.

Education.—Slowly but surely the good effects of educating so many Indian children is telling upon the reserves. A number of ex-pupils have begun farming and are showing the benefits of their training in the industrial and boarding schools. Others are working at their trade as carpenters or blacksmiths. And perhaps in no respect is the result of good training more apparent than in the homes of those Indians who have married girls taught housekeeping under competent instructors in these educational institutions. Cleanliness, neatness, and fair skill in cooking are quite observable to the visitor. Yet too many ex-pupils have gone back to the ways of the old teepee life. Convinced that it is desirable to separate the most promising graduates of the schools from the down-pull of the daily contact with the depressing influence of those whose habits still largely pertain to savage life, the department has authorized an experiment to be made of the colony system. The method adopted does not involve the expense of setting apart separate reserves for ex-pupils; but of selecting a portion of some of the larger and more fertile reserves, some distance from the Indian villages or settlements, and under the immediate eye of a farming instructor and the almost daily visits of the agent himself. The colony of this kind at File Hills has been fairly successful. To encourage it still more the department last spring had a block of twelve square miles surveyed into eighty-acre lots on Peepeekeesis reserve, where the land is all that could be desired for farming purposes. Some fifteen ex-pupil lads have been located on an equal number of these lots and have made a good beginning. They were assisted by being given horses, ploughs, harrows and some lumber and hardware for houses, the greater part of the value of which it is proposed they shall pay back to the department when their crops warrant it, the money to be used to help others to make a like start. Agent Graham in his report for August says:— 'Ben Stonechild started to work a year ago this spring; he has this year forty-five acres of first-class wheat and ten acres of oats. He has also broken fifty acres this year. Fred Deiter started to work a year ago and has forty acres of good wheat and ten acres of oats; he has broken about fifty acres this spring. F. Dumont started a year ago and has thirty-five acres of good wheat; he has broken about twenty-five acres of new land. Jose McNabb and George Little Pine started in three or four years ago; they have about forty acres of wheat in, twenty-five acres of oats and a good garden. They have broken about twenty-five acres of new land this year. John R. Thomas started to work in May of this year, and has broken about fifty acres of new land for next year's crop. This boy is from St. Peter's reserve, and is a good worker and will do well. Alec. Assinibinis of Brokenhead reserve started in early this spring, but took sick shortly after starting. He is well now, and has broken about thirty acres. Ernest Goforth of Regina school spent his vacation on the reserve, and during the time selected a location for himself and broke about twenty-five acres of new land. This boy will be discharged next spring and will have a crop the first year he returns to the reserve. In addition to the above ex-pupils, there are a few who have broken from twenty to thirty acres of new land each.'

It is hoped that similar colonies will be organized soon on some other reserves.

Day Schools.—The day schools though increasing somewhat in number are not improving much. There are many circumstances militating against these, which have been set forth in former reports. They vary more or less according to localities, but no doubt those suffer most that are situated on lands reserved for what may be called non-

resident Indians. The reserves of Western Ontario and Eastern Manitoba are not conducive to permanent settlement. Where such a settlement is possible, we do not always find that the parents particularly wish to see their children educated. Western Manitoba and the Northwest Territories offer better opportunities; but in these regions we have more boarding accommodation, so that the day schools make headway only at certain places They are doing important work, however, as there cannot be higher schools on every reserve.

Boarding Schools.—These are unquestionably doing better work than the day schools, as the pupils, without being separated a great distance from their parents, do not follow them in their wild pursuits, nor are they left for any length of time subject entirely to home influence.

The following is a comparative statement of the provision made for boarding schools in my jurisdiction for the fiscal years 1900-1901 and 1901-1902, also the attendance at the end of each of these years;—

ATTENDANCE at Boarding Schools.

	Provision.		On Roll.	
	1900-1901.	1901-1902.	June 1901.	June 1902.
Norway House	50	50	59	58.
Waterhen,—Closed	15	Closed.		
Pine Creek	40	55	65	67
Rat Portage	30	30	30	36
Crowstand	40	40	43	42
Birtle	40	40	42	44
Crooked Lake, Presbyterian	40	40	30	31
Cowessess, R.C.	20	35	20	38
File Hills	15	15	15	14
Gordon	30	35	30	30
Muscowequan	30	35	30	30
Duck Lake	100	100	101	104
Emmanuel College	40	52	59	53
Isle à la crosse	12	12	17	12
Thunderchild	11	15	12	19
Onion Lake, R.C.	50	50	58	52
do C.E.	16	16	16	21
Saddle Lake	45	45	45	45
St. Albert	80	80	73	80
Hobbema	50	50	47	50
McDougall Orphanage	40	40	47	42
Sarcee	15	15	11	15
Old Sun's and White Eagle	45	45	41	42
Crowfoot	10	10	12	18
Blood, C.E.	50	50	54	56
do R.C.	25	25	19	20
Peigan, C.E.	30	30	22	21
do R.C.	20	20	25	23
Lesser Slave Lake, C.E.	15	15	15	15
do do R.C.	40	40	41	40
Fort Chipewyan, R.C.	40	40	39	36
Smoky River, R.C.	15	15	18	15
Portage la Prairie	20	20	21	21
	1,119	1,160	1,157	1,184

It will be seen from the above that fifteen boarding schools exceed in attendance the provision made for them; ten keep abreast with it, and the rest are slightly under. When the attendance is not up to the mark, it may generally be inferred that there is a real scarcity of children, such as at File Hills, the Peigan reserve, the Sarcee reserve and Touchwood Hills, because the parents being in favour of these schools, the recruiting of pupils is rendered fairly easy.

No aid to erect new boarding schools has been granted this fiscal year. However, a new building has been erected for this purpose by the Presbyterian Church for the Cross Lake Indians, southwest of Rat Portage, to which the department allowed a per capita grant, and since July 1 last a boarding school has been put in operation. Several similar schools have also been established since that date in the Athabaska district. Some of these were institutions of several years' standing, but were recognized for the first time in connection with the estimates of the current fiscal year.

Industrial Schools.—The following is a statement of such schools, the provision made for the two last fiscal years and attendance at the end of each year :

ATTENDANCE at Industrial Schools.

	Provided for.		On Roll.	
	1900-1901.	1901-1902.	June 1901.	June 1902.
St. Boniface	100	100	92	95
Rupert's Land	120	120	133	121
Elkhorn	100	100	83	78
Brandon	100	100	103	114
Qu'Appelle	225	225	232	233
Regina	125	125	118	115
Battleford	120	120	99	90
Red Deer	80	80	64	65
Calgary	50	50	46	38
Dunbow	120	120	82	77
	1,140	1,140	1,052	1,026

The attendance has, therefore, been almost one hundred short of the provision made, and is moreover slightly declining. These large schools are mostly far away from the reserves, and are not popular with the Indians who are fond of either visiting or being visited by their children and cannot generally afford to pay expenses in this connection. The recruiting is, therefore, in some cases indifferently successful.

I may say that the transfer of pupils from boarding schools to industrial schools does not work up to our expectations, not only on account of the unwillingness of the parents, but also because the principals of the former very often do not care to part with pupils who have become useful through their exertions. I hope that these drawbacks will gradually disappear ; the tendency at any rate, is in this direction.

In the industrial schools and most of the boarding schools instruction is given in outside work. This year has been a banner one in regard to agriculture in general and stock-raising. The climatic conditions have been excellent, and although some crops have suffered from freshets in the early summer, most of the schools have got through in very good condition and had better returns than ever before.

In the larger schools other industries than farming are taught, such as carpentry, blacksmithing, &c., but I have tried to discourage the introduction or even continuance of so many shops which are not likely to turn out any but a small number of good mechanics. It is a waste of funds to employ an expert craftsman in a school to train a mere handful of pupils who in the end may be unable to turn their knowledge to advantage.

The death-rate in our schools is noticeably smaller, though we had a share of the prevalent epidemics in several of them last winter ; but except for after-effects in a few cases, the pupils have nearly all got through very satisfactorily.

Surrenders.—In January last a surrender was taken of a portion of the reserve of Enoch's band in the Edmonton agency. The portion surrendered comprises fourteen square miles, or about 8,960 acres. In July last acting under the instructions of the

Deputy Minister, I secured a surrender of township 46, range 20, W. 2 M. (excepting thereout section 6 and S½ of section 7), being portion of Indian reserve 100A, of the Cumberland band. I also effected an amalgamation of this band with James Smith's band of reserve 100. These surrendered lands are being subdivided, and will soon be ready to place on sale.

Officers.—One agent and several farming instructors have been changed during the year to secure greater efficiency. The staff in my office is giving highly satisfactory service.

I have, &c.,

DAVID LAIRD,
Indian Commissioner.

NORTHWEST TERRITORIES,
QU'APPELLE INSPECTORATE,
FORT QU'APPELLE, October 11, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my seventeenth annual report of my work in inspecting Indian agencies and reserves in the Northwest Territories, from October, 1901, to October, 1902.

On October 26, 1901, I reached Moose Mountain, with the view of purchasing lumber, to enable the Indians who had moved down from the two upper reserves, to floor their new houses, make doors, &c. After visiting the new houses already built, and those in course of erection, and making an estimate of those still to go up, I purchased the required quantity of lumber, sashes, locks, latches, hinges, nails, &c., lumber sufficient to floor all the houses, and to make doors for houses and stables, the cost to be charged against each Indian's 'bonus' account, from the sale of the two upper reserves.

The Indians were much pleased at getting the lumber, and in a short time they all had comfortable houses for the winter.

A few of White Bear's band got lumber also, so that not a house was without a wooden floor, and good doors for houses and stables, payment charged against their portion of the 'bonus,' for allowing the upper bands to join them.

CROOKED LAKE AGENCY.

I commenced my inspection here on November 26, 1901.

Magnus Begg, agent; J. W. Jowett, clerk and storekeeper; Harry Cameron, teamster and interpreter; Jas. Sutherland, engineer, blacksmith and miller; Peter Hourie, farmer at No. 74; J. Pollock, farmer, 71 and 72; the agent attends to 73.

The agency experienced a successful year, and Indians were all in good spirits.

The crop put in on the agency was:—

		Harvested.
572 acres	wheat	8,806 bushels.
134 "	oats	4,559 "
3 "	barley	150 "
17 "	potatoes	2,055 "
4 "	turnips	500 "
1½ "	gardens.	
A total of	grain	13,515 "
"	roots	2,555 "

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JIM BIG PLUME AND WIFE, MINOR CHIEF, SARCEE RESERVE, NEAR CALGARY, ALTA.

The gardens did not amount to much, and what little they did produce was consumed during the season.

The crop of grain by reserves was :—

	Wheat.	Oats.	Barley.
No. 71	1,172	125	
72	1,582	350	
73	3,769	3,225	150
74	2,283	849	
Bushels	8,806	4,549	150

Some new houses had been put up on 74, also several granaries, stables, and cattle sheds. Yellow Calf had built a large cattle-shed, and his homestead had an air of thrift about it.

Acoose had also a nice place ; Ogema, who had the good breaking I noticed last year, moved up from No. 71, and built a good house and two stables, a granary and a hay corral, he had 560 bushels of wheat, 275 of oats and lost about 75 bushels of wheat by snow and rain getting into the stacks before threshing,

Mr Hourie built a good stable for the farm horses, 27 x 18, and put a neat covering over the well, which is supplied by a never failing spring near the house. The late Col. McDonald and myself selected this site for the farmhouse when it was built, on account of this fine supply of the purest of water.

Some improvements were noticed on 71 and 72, but a few of the houses were dirty, and I called Mr. Pollock's attention to them. Belanger, an enterprising Indian, had a nice clean house, with a lean-to kitchen, and he also has good stables. He has fifteen head of cattle, two pigs, twenty-five poultry ; a good granary, 300 bushels of wheat, 100 of oats, 150 bushels of potatoes, plenty of hay and straw, bought a new binder last year in partnership with a couple of other Indians. The outbuildings included a frame water-closet, painted red ; altogether a comfortable homestead. Lauzon, who formerly lived in the valley, moved up with his two sons to the bench about four miles from the agency headquarters, on the trail to Broadwiew, a pretty location and had built a nice house one and one half story, good floor and panel doors, well furnished, an iron bedstead, with brass mountings, a horse stable and a sheep-pen ; and a large cattle-stable was about being completed.

The crop on the old place was 400 bushels of wheat, 250 of oats and 70 of potatoes.

The new house is occupied by the younger son, who is an Elkhorn graduate and is married to another Elkhorn graduate. This is the boy to whom a shoemaker outfit was given, and he still does some mending, and he says he could do more work, but he has not always got leather.

They have broken 25 acres of land at the new place, ready for crop 1902. Wahsacase has also broken 25 acres at the same place, on the other side of the trail. He fixed up the old warehouse on farm 72 for a dwelling and it makes a good house. Lauzon senior also put up a small house for himself and wife, and the old couple were contented and happy at seeing their sons settled around them and doing well.

The old Chief Kahkawistahaw's house was about the poorest and most comfortless place I saw.

The old man is blind and helpless and his old wife has to lead him like a child. His stepson is looking after his cattle, and a good stock of hay was on hand. I have told Mr. Begg to see that this old man does not suffer in any way, and to see that he is made as comfortable as possible in his old age. He is a fine old man, and has never been troublesome, and I must say, has been much neglected by the present as well as former agents, just because he was not like some other chiefs always clamouring for something, which was often granted to keep them quiet.

The new farmhouse was occupied by Mr. Pollock and it is a comfortable one.

Mr. Pollock had no field of his own, and I told him to get one ready and not depend on the agency for his oats.

There was no summer-fallow on either 71 or 72, a few acres of fall-ploughing, and the fifty acres of breaking I have already mentioned. There was scope for more energetic work on these two reserves.

No. 73 is occupied principally by experienced farmers, such as A. Gaddie and others, and their farms will compare favourably with those of white settlers.

The agency buildings were in good condition. Mr. Begg is careful in having everything in good order around the agency headquarters and Mrs. Begg is a capital housekeeper and her store-room was well filled with preserved fruits, jams, &c., for the winter.

The agency garden was a good one and the cellar was filled with potatoes, turnips, onions, beets, carrots, cabbages, celery, &c.

Mr. Jowett had also a good garden and a fine crop of vegetables. Mrs. Jowett attended to the garden, and whilst looking well after the more substantial products, the beautiful was not overlooked and there was a splendid display of flowers, which were admired by white people and Indians alike.

Mr. Sutherland had a good field of oats, which gave him all the feed required for his horse, also some barley. His house had also been completed and it is a comfortable one. The interpreter's house was also completed, except some siding for the outside of the walls.

The agency field produced 750 bushels of oats of a superior quality.

The agent and Mr. Jowett have started a lending library and have quite a collection of books and magazines, which they lend out to school graduates and others.

The mill was all ready to begin gristing.

The office had had a verandah put on in front and it is an improvement.

There is a flag-staff and flag. It was the first time I ever saw it put up for visitors, Mr. Wright would only put it up in honour of royalty, which was seldom.

The office work continues to be admirably kept by Mr. Jowett. The usual audit was made and inventories taken, and full statements sent to the Commissioner.

The total number of cattle in the agency was 717, 32 sheep and 4 pigs, and 280 Indian horses and ponies.

Assiniboine Agency.

I commenced my inspection here on December 14, 1901.

Thos. W. Aspdin, agent.

Daniel Kennedy, interpreter and general assistant.

Big Darkness, teamster.

This reserve had a successful year and Indians were working well. The agency improvements were a new cattle-stable, 22 x 30, a new frame water-closet, a double cattle corral, about three and a half miles of wire fencing, willow pickets, inclosing a pasture, agent's field and agency premises, agent's house painted and kalsomined inside, all the other buildings had been whitewashed with lime and the whole place was in excellent order.

About 250 acres had been under crop in grain and roots, 1,075 bushels of roots, had been harvested. The wheat and oats were still in stack, waiting for the threshers; thirty stacks in all of more or less size, and the agent expected 3,500 or 4,000 bushels.

Twelve Indians summer-fallowed ninety acres. Three new houses, one with shingled roof, had been put up and nine new stables.

The Indians invested their cattle money to good advantage, the chief bought a set of heavy, double harness, a pump for his well, and 33 feet of piping—at a cost of $20—lumber to finish his house, a cooking stove and a factory-made bedstead.

Medicine Rope, a cooking stove and a bedstead.

Chas. Rider, a democrat wagon and a work horse.

Geegus, lumber and shingles for his new house, bedstead, chairs, &c.

Adam, a bedstead.

Pretty Shield, a bedstead.

Oakshippie, lumber to floor his house.

The Indians sold eight steers for $295, or equal to $37 each.

A kiln of lime was burnt, which gave them all the lime required to whitewash their houses.

The cattle were all in good condition, and each man's stock counted in the stables, and found correct, as per cattle record. The stables were all first-class, and kept in good order. The new wells were a boon for the cattle.

Eahsickan has a thrifty-looking place, two good stables, with good doors, has twelve head of cattle, clean, tidy house, kitchen, and bed-room, bedstead, new cooking stove, tables, chairs, cupboard, with dishes nicely placed in it. Storm door on his house, altogether a comfortable homestead.

Geegus, new house built by himself, shingled roof, had a good crop of wheat and oats.

Joseph, who married Nellie, a graduate of Regina school, lives in the late Chief Jack's house; it is a roomy one, shingled roof, has a kitchen, sitting-room, and a bed room, the house was clean and tidily kept. Joseph has two heifers, a pig and a few hens. This young man is likely to get along well. The chief's place was never in such good order, his stables were better than I ever found them, and large hay stacks were alongside. He has twelve head of cattle, a fine well, and with his new pump the work of watering the cattle is an easy one. The chief looks after the feeding of his cattle himself.

Medicine Rope built a fine new stable, has a good house, roof painted red, good well.

Chas. Rider is one of the most enterprising men on the reserve, and every year I notice an advancement in his place. His house had been newly whitewashed, and it looked well. He has twelve head of cattle, some good horses, six pigs, twenty poultry and he sells eggs in Sintaluta. He had a good crop of wheat, oats, potatoes, turnips, onions and carrots.

Rider's brother has also a good place, and the two brothers are doing well.

I heard of no dancing on the reserve during the year, the Indians built a dancing hall, but Mr. Aspdin made them take it down, and this ended, so far, any more dancing.

No drinking has been noticed on the reserve during the year, and the behaviour of the Indians has been excellent. The health of the Indians was good, only a few scrofulous cases requiring attention.

The mission is still conducted by Mr. and Mrs. McKenzie, meetings are held every Sunday at 11 a.m., and 4 p.m. and the attendance is satisfactory, and the Indians seem to be interested in the services.

The live stock of the reserve is 140 head of cattle, 12 pigs, 94 poultry, and 80 Indian horses and ponies.

The Indians of this reserve have made good progress during the year, and Mr. Aspdin is to be congratulated on the successful results of his labours amongst them as agent. The books and other office work were duly audited, and inventory of government property taken and all were found satisfactory. Mr. Aspdin loses no opportunity of helping and encouraging his Indians to advance, and become independent, most of them, if not all, are so now, of course, there will always be the very old and helpless to look after and I do not think that these helpless creatures should be neglected, and I am sure it is not the policy of the department that they should, but all able-bodied men and women are only helped to help themselves, and this wise course has been a success on many reserves.

Moose Mountain Agency.

On January 30, 1902, I arrived at Moose Mountain agency with the view of paying Indians moneys which they were entitled to from cattle dealings they had the previous year, and whilst there I made my inspection of the agency, although three months earlier than I intended.

J. W. Short, farmer in charge.

W. Murison, farmer and clerk.

The Indians had a fairly successful year. The lateness of the Indians of the upper reserves in coming down prevented a larger crop being put in, but a good many had

potatoes, turnips, &c., and some 2,500 bushels of wheat and oats were harvested. Thirty acres of new breaking had been done and 25 acres of fall-ploughing, there was no summer fallowing, as all the broken land was under crop.

I was more than pleased with the new houses which had been put up in the fall. They looked nice with the clean wooden floors, windows and doors, and in some I noticed lace curtains on the windows. Open fireplaces in many of them, and I asked those who had not these to have them put in for the sake of the health of their children as well as for their own. A good many of the Indians have bedsteads, tables and chairs, and others were to buy these things as soon as they got their share of the compensation coming to them under the sale of the old reserves.

The new stables were roomy, dry and warm, all had good doors from the lumber given them. The cattle were looking well and were counted from stable to stable, the total number was 293 head and 158 horses and ponies. Eight animals had been sold at 3¼ cents a pound, live weight. The average weight was 1,208 lbs. (six steers and two cows).

There was plenty of hay on hand, and Indians would have some to sell in the spring. The winter was mild, and cattle could feed out on the hills, preferring the grass to the hay.

The Indians were earning considerable in selling dry wood, and could do a great deal more in this line, if properly managed.

When I was here in the summer of 1901, there was a council-house near Kakakeway's, and it was used for council meetings and an occasional dance on Saturday evening, but never prolonged into Sunday, and there was no particular objection raised; but since then two dance-houses had been put up: one at the upper end of the new village (Assiniboine), and another, the chief one, a huge structure, finished inside with all the required toggery for the due performance of the dance in true orthodox fashion.

The old council-house is turned into a stable, and if ever a dance is attempted, it will at once be taken down. The one at the upper end is also turned into a stable, and a reliable Indian has control, and it will never be used as a dance-house. But the centre or main building had to come down: it was against the grain of some of them, but finally they gracefully levelled the building and sold the logs.

One argument with them is: White people dance, and why cannot we? My reply was: Cases are different; Indians are wards of the government, and if the government thinks dancing and giving away all they (the Indians) possess, is wrong, it is the government's duty to stop it. White people can dance on their heads, if they like; they are not wards of the government, and, besides, they do not give away their property.

The health of the Indians was good, and they all seemed comfortably clothed. A kiln of lime was burnt, which provided them with this article to whitewash their houses. The horse-stable at the agency headquarters had been put into good order, and it is now roomy and comfortable.

The Presbyterian mission, conducted by Mr. and Mrs. Dodds, is doing a good work, and the Indians are never slow in seeking advice from Mr. Dodds.

Now that these three bands are on one reserve and can be constantly under close supervision, there is every reason to hope for great progress in the future.

Before leaving, I got the consent of the headmen to the following expenditure:—$3,500 to put a wire fence around the entire reserve; $700 to be expended to drain the hay-meadows, which would ensure from 1,200 to 1,500 tons of hay, where only a few tons can be cut now; an expenditure of $1,500 to purchase 1,500 acres of wood and hay land, half a mile strip along the north side of the reserve. These several sums to be charged against capital account, composed of the proceeds of sale of the two upper reserves.

Before leaving, I also made up each Indian's account from the agreement entered into by which compensation was given on the following scale, namely:—all Indians from the western reserve were to get $42 each, man, woman and child, and White Bear's band to receive $15 for each man, woman and child, and the number to be allowed as per pay-sheets of 1901. These accounts were all made out, and against these were charged the lumber purchased for them; also $500 in cash, at the rate of $4 each for the Assiniboine and $2 each for White Bear's, which I paid them. The Indians'

accounts were all collected and checked over, and, after the Indians had certified to their correctness and authorized their payment, these were forwarded to Winnipeg, and cheques were sent to the different storekeepers and traders, and the Indians were thus able to begin 1902 with a clean sheet, and a balance of $2,566.65 to the good, to be drawn against for needful articles and supplies, as authorized by the Commissioner. I need hardly add that a considerable amount of labour was entailed in getting all these accounts into proper shape, writing Indians certificates, &c., and I wish here to say that Mr. Murison gave me the greatest help in the work.

The usual audit of the books was made, and inventories taken. Mr. Murison was doing the office work and was careful and correct in all he did.

QU'APPELLE AGENCY.

I commenced my inspection here on March 11, 1902.

Staff.—W. M. Graham, agent; R. L. Ashdown, clerk and storekeeper; Mark Ward, interpreter and teamster; D. J. Grant, farmer Piapot's reserve; J. D. Finlayson, charge of Muscowpetung's ranch; Jas. Hawes, farmer Muscowpetung's reserve; S. Hockley, farmer Pasquah's reserve; A. H. Miles, farmer File Hills' reserves; Joseph Denominee, in charge of File Hills' ranch.

The agency buildings were in their usual tidy condition. The Indians of this agency had a most successful year and were abundantly rewarded for their labours.

The first reserve visited was Piapot's. The houses had all been whitewashed with clay, stables and corrals were in good order, and the village had a neat and comfortable appearance. The cattle were looking well, the feed in hay and straw being plentiful.

The crop put in in 1901 was 134½ acres of wheat, oats and roots, and the yield was wheat and oats 3,149 bushels and 313 bushels of roots. Five acres of new land broken, and twenty-five fall-ploughing, arrangements were made for a quantity of new breaking this spring.

The Indians were getting good prices for wood in Regina, and they were all living comfortably. Mr. Grant, the farmer, was doing very well.

The ranch was next visited. The stables were in good order, and cattle counted satisfactorily. The calves were a nice lot. They have a stable and corral by themselves and the corral joins the river, so that good clear water is available at all times.

Two hundred tons of hay would be over here, as the cattle fed out a good part of the winter. Mr. Finlayson is a careful man and seems in his element among cattle. The working account of this ranch was made, and results were satisfactory.

Muscowpetung's reserve was next reached, and I found houses and stables equally as good as at Piapot's. The cattle were feeding out and were in fine condition, hay would be over here also. Mr. Hawes seemed to be a competent man, and he knew his Indians very well for the short time he was amongst them.

The crop put in here was 90 acres and results were: 1,800 bushels wheat and oats and 100 bushels of roots, no new breaking nor fall-ploughing had been done, but plans were arranged for a lot of breaking this spring. The farmer was living in the clerk's house, and the old agency buildings were closed up. The Indians were civil and seemed to be well off, being warmly dressed.

Pasquah's reserve was next reached. The houses on the bench and in the valley were in good order, so were the stables, and the cattle were in the best of condition, there being lots of hay and straw. Mr. Hockley is a careful and experienced man, and his quiet way of managing his Indians tells in the end. The crop put in here was 222 acres of grain and roots; results: wheat 4,456 bushels, oats and barley 2,000, roots 1,167.

New land broken 100 acres, summer-fallowed 50 acres. This reserve is a prosperous one, and the homesteads on the bench are all of a superior class and compare favourably with those of the white settlers.

Sioux Reserve.

The Indians here were unfortunate in losing by prairie fire all their hay, in consequence the cattle were driven down to File Hills to winter. A farmhouse was put up

on the Sioux reserve, but at the time of inspection it was not occupied, as no farmer was required. The Indian houses were in their usual good condition. The crop put in here was 123½ acres of grain and the usual acreage of roots.

Results were: 2,193 bushels of wheat, oats and corn, and 2,500 bushels of roots. One hundred acres of new land broken and 20 acres summer-fallow.

These Indians are industrious and have always earned their own living and have never been a burden on the department.

The cattle will be returned to the reserve in the spring. These Indians are well supplied with wagons, mowers, rakes, bob-sleighs, ploughs, &c., and being thrifty, they are in comfortable circumstances.

File Hills Reserves.

The crop put in on the four reserves was 307 acres of grain and 20 of roots; harvested: 3,000 bushels of wheat, 11,500 oats, 2,500 bushels potatoes, 3,600 bushels turnips and 200 bushels other roots, or a total crop on the agency of 28,193 bushels of wheat and oats, and 10,480 bushels of potatoes, turnips, &c., 2,000 tons of hay had been stacked, chiefly at the stables; 200 acres of new breaking had been done, no fallow as all land was under crop.

The Indian houses and stables were in their usual good condition and cattle were looking well for the time of the year, and the Indians were in the best of spirits.

The File Hills ranch was found in good condition, and cattle looking well, a statement of the working expenses of this ranch for the twelve months ending March 31, 1902, was made and was satisfactory, as it showed careful management.

There were 1,000 logs for building purposes on hand; these were hauled out from the timber limits during the winter, and lumber, shingles, windows, doors, &c., were on hand to put up five new houses for graduates who had broken land, and settled on the reserve, principally in a colony by themselves, at the south side of Okanase on Peepeekeesis reserve.

Thirty three-year-old and four-year-old steers had been broken during the winter, and will be fit for spring work, the hauling of the logs was good practice in the breaking in of these steers.

The third exhibition took place in June, 1901, and was a success in every way, and Indian women were busy preparing articles for the one to be held in 1902.

The following articles were purchased by Indians during the year and paid for from their own earnings:—

14 ploughs	$364
7 harrows	140
7 horses	500
6 wagons	400
6 rakes	180
3 mowers	150
2 binders	285
2 seeders	253
1 disc harrow	37
	$2,309

In addition to the above they purchased $350 worth of binding twine and $200 worth of other farming articles, threshing accounts, &c. Six new graduates will put in considerable crop this year.

These Indians had contracted to supply the flour required for Touchwood agency as well as that required for Qu'Appelle agency. The contract is for 550 sacks. Fifteen double wagons drove in one day before I left with the flour they had got ground at Indian Head, part of the contract, and I could not but contrast this scene with my experience in early days at this very agency, when one was besieged from morning till night by Indians clamouring for more grub, although they were at the time getting liberal rations, but they made little, if any, effort to try and make a living for themselves

The books I found correctly kept by Mr. Ashdown and he was performing the office work and keeping the stores in a business-like way. The cash transactions in this agency are now numerous and office work is increasing.

The total number of cattle in the agency was	1,440
Indian horses and ponies	695
Sheep	6
Poultry	325

Small-pox was prevalent during the early spring all around the Indian reserves, but not a case occurred among the Indians.

The prospects were bright for another successful year on this agency, and Mr. Graham was doing his best to make it a record year, in cattle, crops, and general progress. The usual statements and inventories were forwarded to the Commissioner.

I left Fort Qu'Appelle on April 29, for Touchwood, and commenced my inspection there on April 30, 1902.

Staff.—H. Martineau, agent.
G. H. Gooderham, clerk and storekeeper.
Geo. McNabb, interpreter and teamster.
Edward H. Stanley, farmer at Poorman and Day Star's reserves.
J. W. Harrison, farmer, Gordon's reserve.
P. J. Hamilton, farmer, Muscowequan's reserve.
Josiah Pratt, (a member of Gordon's band), farmer at Fishing and Nut Lake.

The agency buildings were all in first-class order. The first reserve visited was Poorman's. The farmhouse, stables and premises were all in good order, and Indian houses and stables were also found in good condition. The houses were chiefly vacated, but they were left thoroughly cleaned up and all the winter debris burnt.

This reserve had a successful year in the way of crops, 80½ acres were in crop and there were harvested 204 bushels of wheat, 3,050 bushels of oats, 505 bushels of roots, and the farmer had from his own field, 149 bushels of oats and 45 bushels of roots.

The band got out during winter 3,000 rails and 220 building logs, and these were on the ground ready for use. Two new houses, three stables, one cattle and two implement sheds had been put up during the year. The band purchased since last inspection, and chiefly paid for—1 wagon, 2 ploughs, 1 binder, 3 mowers, 3 rakes, 1 bob-sleigh, 3 sets harness. The Indians sold most of their oats at 25 cents a bushel, and they paid for the seed, twine and some small implements, such as forks, &c.

The health of the band was good and dancing was less indulged in than formerly and prospects were hopeful of this dancing being discontinued altogether.

A good deal of hay was left over and would be kept for next winter's use. It was proposed to have 110 acres in this spring, the Indians were busy at work, ploughing and harrowing and a good deal of the seed was in.

Some of the fields gave an average of 110 bushels of oats to the acre. Forty-one acres of new land were broken and 104 acres of new fencing put up. This reserve was in good order. The herd numbered 236 head, and for the time of year the cattle were looking well. Mr. Stanley was doing excellent work and left nothing undone in order to help along the Indians under his charge.

Day Star's, also under Mr. Stanley, was next reached.

This band made considerable of a start in the way of farming, as compared with former years, they had 18 acres under crop; and harvested: 110 bushels of barley, 320 of potatoes, 93 bushels of turnips, 38 of carrots, 32 of onions and 50 acres were to be under crop this year, 1902.

A kiln of lime was burnt and all houses were whitewashed and they have a nice appearence on approaching the reserve. The Indians also did splendid work in providing accommodation for their cattle. Two new houses had been built, eleven new stables and seven cattle-sheds octagon-shape, roomy and well suited for cattle, all being strongly

built and generally placed in well sheltered spots. I gave them a talking at last inspection about their poor stables, and was pleased therefore, to find such improvement. The agent and farmer, of course, also urged the Indians on to do the work.

The band purchased and paid for: 1 plough, 1 seeder (second-hand), 1 mower, 1 set harness; this is a big advance for Day Star's, 3,400 rails and 120 building logs on the ground ready for use. 137 acres of new fencing were made. The cattle were in fair condition. The herd numbered 188 head. The grass (May 8), was not very good and although there was hay at the stables, the cattle seemingly preferred to nibble at what little grass there was.

The bulls of the two bands were in a paddock by themselves at Poorman's and were in good condition.

This band earns a good deal in supplying the agency with hay and wood, freighting, &c., and they made a good deal hunting musk-rats, for which they received twenty-five cents in store pay for three and sometimes twenty-five cents for two. I fancy this means about equal to 4 cents each in cash.

The Indians were all very pleasant and they always like to be visited.

Gordon's reserve was next reached; Mr. Harrison being farmer in charge, having been appointed since I was here last. The farmhouse, having been unoccupied for some years, needed some repairs, which I noted, and informed the Commissioner.

This reserve has always been noted for its good houses and stables and I noted further improvement this year.

The new blacksmith-shop is 20 x 24, and many repairs are made. J. Anderson, an Elkhorn graduate, is the blacksmith and his brother, also from Elkhorn school, is a carpenter, and they are anxious to have a carpenter's shop alongside of the blacksmith one. Some new houses had been put up and others were in course of erection. John Cyr, a new house and stable. I complained last time about this man's house being too small and dirty, it was, therefore, satisfactory to find a neat, new house and kept clean.

Henry Bird, a neat, new house, shingled roof, doors and windows painted green, wooden floor, whitewashed outside and in, curtains on windows, and house comfortably furnished.

Francis Cyr, house raised in the roof, shingled, double doors and windows.

Bill Hornie, new house.

Colin Cyr, roof raised, plastered inside, upstair rooms, good porch, sewing-machine in house.

Alex. McNabb, house rough-cast outside.

Jos. Anderson, new house, shingled roof, new stable.

Jos. Cochrane, nice house being built.

Iron Quill, house and stables about 8 miles off the reserve, where hay is plentiful. His field is on the reserve and two ploughs were working. Iron Quill has 30 head of cattle and is doing well.

Wm. Cochrane had a new house almost completed.

The cattle were looking well, the herd numbered 401 head and 83 horses and ponies. The acreage under crop 1901 was 51 of grain and 12 of roots; harvested: 247 bushels of wheat, 1,950 bushels of oats, 33 bushels of barley, 718 bushels of potatoes, 320 bushels of other roots.

Hay was left over. The crop put in this year, 1902, was expected to be about 11 0 acres and will be better divided, instead of being in the hands of a few. I told them they should have 500 acres in crop.

Thirty-five of the band are holders of cattle, and some of the young men were anxious to make a beginning. The bulls were kept at the farm stable, and they were in prime condition.

Mr. Harrison was doing very well, he is most anxious to be useful in advancing and helping his Indians and especially the younger men, and they often visit his house, where he gives them talks on farming and other subjects. Mr. Harrison is most gentlemanly in his intercourse with the Indians and he seems to have won their confidence.

The band purchased during the past year and paid for same:—

Disc harrows	2
Ploughs	2
Horse-rake	1
Harness sets	5
Bob Sleighs	2
Wagons	2

and I believe the band purposes to buy for its own use a new threshing-machine.

I consider this reserve was in a prosperous condition and there was an air of advancement to be noticed all around.

Muscowequan's reserve was next reached. Some improvements were noticed here. A stable had been put up for the bulls, and a five-acre paddock. Five bulls were in this pasture and they were in good condition.

The old farmhouse had been taken down and the material used in building a granary and a small storehouse, Indians doing the work, a hennery, 14 x 12, had also been put up. The farmer had a ¾ acre plot for a garden and the vegetables sown were looking well, The whole place was fenced in, and had a tidy appearance. The crop of 1901 consisted of 20 acres of oats and four of roots, half of the oat-field was ploughed down and the yield of the other half was fed in sheaf, 450 bushels of potatoes were harvested and 75 bushels of turnips and other roots.

The Indians, with the exception of two, had their own seed.

One hundred and fifty loads of hay were over and would be kept for next winter. The crop put in this year, 1902, was 41 acres of oats and 4 of roots; 7 acres of new land were broken in 1901, and an effort was to be made to get 50 acres broken this year and some good spots for fields were pointed out. Mr. Hamilton was encouraging the Indians in every way possible to go more into farming The Indians had a good season hunting musk-rats, the catch in April alone was over 13.000. Some of the younger men were anxious to have cattle, and the agent was to try and help them in this respect.

The cattle were looking well. The herd numbered 224 head and 31 horses.

The health of the Indians at the time was good. The Indians were pleasant and all seemed to be in good spirits.

Fishing lake was inspected on my way to Yorkton. The Indians were all away, and the farmer, Mr. Pratt, I met at the agency headquarters before leaving there.

Two new houses had been built, two large sheds had also been put up. The crop put in this year was 22 bushels of potatoes, 5 bushels of oats and one bushel of barley, besides garden seeds. The cattle were looking well, the herd numbered on March 31, 158 head; 1 ox, 1 cow, and 1 steer died since March 31.

The hay-supply here was rather short, but Mr. Pratt said that owing to the mild winter he pulled the cattle through without any loss. There is no reason why there should be a shortage of hay, for there are good meadows all around, in any case the Milligans, who are neighbours, are always willing to lend or sell any hay required. It was impossible to go to Nut lake, the roads being impassable; a survey party attempted but had to turn back.

The cattle sold at agency ranged in prices from 2½ cents to 3½, according to weight of animals. The following are the results of the sales:—

2,580 pounds at	3½	$ 90 30
9,260 "	3¼	300 95
2,250 "	3	67 50
24,649 "	2½	616 22
One animal on foot		30 00
		$1,104 97

It will thus be seen that more than half of the total amount is for animals which only brought 2½ cents a pound live weight.

It is scarcely worth the trouble to raise steers and sell them when three years old for 2½ cents a pound, it is a miserable return to the Indians.

The agency books were carefully examined and I must bear testimony to the efficient way in which Mr. Gooderham performs his duties, everything being in a business-like shape.

I have to give credit also to George McNabb for the good care he takes of the horses, these were a credit to the agency.

The agent has not spared himself during the past year. His diary shows that he has been regular and constant in his visits to the various reserves, and in every other way most attentive to his duties, and I found things in general in good working order. The agency is a fine one and there is not better land in the country than on Poorman and Gordon's reserves, and now that a railway is likely to pass near by, there are good prospects ahead for the Indians of this agency. The total number of cattle is 1,213 head and 353 horses and ponies.

Pelly Agency.

I commenced my inspection here on June 8, 1902.

R. S. McKenzie, agent.
Fred Fischer, clerk, interpreter, storekeeper and assists in the farm work.
Jas. Hunt, labourer.

The agency buildings were in capital order. The office had been considerably improved, and nice cupboards put in for the medicines, which are now kept in good order. The stables had also been well arranged, and new sod roofs put on.

A number of fine square logs were on hand for a new horse-stable, and the old stables will be kept for the cattle. New water-closets had been put up for agent's house and for the office.

The crop put in in 1901 was as follows:—

Cote's band, 93¾ acres grain and roots.
Key's " 19½ " "
Keeseekouse band 51 acres grain and roots.

Harvested—

Cote's, 1,347 bushels oats, wheat and barley.
Cote's, 772 bushels roots.
Key's, grain none.
Key's, 235 bushels roots.
Keeseekouse, 340 bushels oats and barley (wheat was destroyed by hail).
" 446 bushels roots.

A good deal of the grain was injured more or less by hail and was fed in sheaf.

The farm crop was 17 acres of oats, 2 of wheat and 10 of barley and the whole was badly damaged by hail. The crop put in this year, 1902, was—

Cote	151 acres.
Key's	29 "
Keeseekouse	86 "
Agency	30 "
	296 acres.

which is 101¾ more than in 1901, so that these Indians are moving on in the right direction. The new breaking was 71 acres and summer-fallow 30¾ acres. The number of Indians who have fields is 29 (Cote 15, Key's 5, Keeseekouse 9).

Nearly all the Indians had gardens and potato patches of more or less size, and I found the women at some places weeding and hoeing. The fields were looking very well

and fencing was good. Chief Côte and the Singuish brothers had put up 84 acres of wire fencing. They purchased and paid for the wire themselves. The Singuish brothers also purchased for themselves a seed-drill and a binder. These Indians are more interested in farming than ever before, and if the crop turns out well this year, and escapes hail, they will go more extensively into the work. Some of the young men had good fields and with a little encouragement are likely to be successful farmers. Cote's band alone should have 1,000 acres in crop, there is no better land in the country and the railway I understand is to run through one corner of the reserve, so that want of a market will be no excuse for not raising crops.

Seventy-nine head of cattle were sold in the fall of 1901.

					cts.	
Average weight,	1,302,	52 steers,	68,090	pounds at	3·55,	$2,417 19
"	1,285,	2 "	2,570	"	3,	77 10
"	1,037,	10 "	10,370	"	2½,	259 25
"	1,210,	5 cows,	6,050	"	3¼,	196 62
"	925,	2 "	1,850	"	2½,	46 25
"	1,760,	1 ox,	1,760	"	2,	35 20

Department account—

Average weight,	1,205,	2 steers,	2,410	"	3·55,	85 55
"	1,550,	3 bulls,	4,650	"	2,	93 00
"	1,635,	2 oxen,	3,270	"	2,	65 40
		79				$3,275 56

This is a very fair showing; 52 steers out of 65 Indian cattle weighed an average of 1,302 pounds, but there is no reason why the other ten should only average 1,037 pounds and, therefore, were sold at 2½ cents a pound, next thing to throwing them away.

The Indians were paid the proceeds of their cattle before they left Yorkton.

The fields and gardens at Key and Keeseekouse's reserves were looking well. The Indians were all living in teepees.

The stables, as is usual in the spring of the year, were dilapidated, but these are generally put in order before winter.

The office work was checked over and the whole reflected credit on the clerk, Mr. Fischer, who keeps the books and accounts in the best of order.

The agent, Mr. McKenzie, has done very well, and if the Indians do not progress, it will not be owing to any neglect on the part of the agent, who is early and late out amongst them. The total number of cattle is 877; sheep, 90; horses and ponies, 166; poultry, 130. Detailed statements and report were sent to the Commissioner.

On June 26 I left for Yorkton, and after completing some work there I left on July 1 for Birtle, but on arrival there I received a telegram from the Commissioner to proceed to Carlton agency, where I would find instructions. I, therefore, left for Regina on July 3, and left Regina for Carlton on July 7, arriving at Carlton agency on July 8.

The instructions were to transfer the agency from Mr. Goodfellow to Mr. James Macarthur and to supervise the treaty payments.

Mr. Goodfellow had already left the agency, and Mr. Macarthur had arrived a few days before I did. My first business was to check the books since last inspection by Inspector Chisholm, December 31, 1900.

When I had completed this work, we started to pay treaty, but not before the cattle were rounded up at each place. We paid Muskeg lake on July 18, Mistawasis on July 19, Sandy Lake on July 21, Big River, July 22, and after inventories had been completed (except Sturgeon lake) we drove to Sturgeon lake, had cattle rounded up, and farm inventory checked over, and paid treaty on July 30, total amount paid to date, $3,685, the sum of $320 was returned to be funded for school children. We returned to Prince Albert, and on July 31 I transferred the agency to Mr. Macarthur. Transfer documents, inventories, and statements were forwarded to the Commissioner, Winnipeg.

I may say that in going over the various reserves, I found the cattle in very good condition, and the following acreage was under crop:—

	Acres.
Sandy Lake	338
Mistawasis	180
Muskeg Lake	125
Big River	29
Sturgeon Lake	51
Round Lake (Sioux)	26½
Total	749½

And I noticed some new breaking also, especially at Muskeg Lake, and on Mistawasis. Big River is a new reserve since I was here in 1896. It is a pretty reserve, a school house, farmhouse, teacher's house, stables and storehouse, are the present buildings. A new school-house had also been put up at Sandy Lake, and one at Mistawasis, since I was here last. The schools were all closed for holidays.

There were a few matters in connection with this agency which I took occasion to call attention to in my report to the Commissioner, although not directly in the form of a regular inspection.

I cannot but record my thanks for the able way in which Mr. Jackson, the clerk, assisted me in my work, and say that I found his books exceedingly well kept, and he will be a valuable help to the new agent, being reliable, careful, painstaking.

Mr. Macarthur, the new agent, has entered upon his duties with energy and a determination to make a success of his position as agent, and I must say that from his dealings with the Indians the short time I was with him, I feel sure that he will prove to be a successful agent. His integrity, business ability, and good judgment coupled with gentlemanly deportment towards all, cannot but have a good effect on the Indians generally. He will be kind and tolerant, but at the same time firm, and I shall always be glad to hear of his success.

I was about leaving for Qu'Appelle to make my annual reports, when I got a letter from the Commissioner asking if I would make the northern payments, as Mr. Chisholm was detained at Rupert's Land school.

I at once made arrangements for the trip, and left Prince Albert on August 11 with Dr. Bourgeault of Duck Lake, who was going to vaccinate the Indians, they having asked the year before for a doctor, Mr. Goodfellow as clerk; I had a teamster, Angus McLeod, who took provisions and camping outfit, and Mr Fiddler drove Mr. Chisholm's team and democrat. We paid four or five families at the new reserve, and then proceeded to Montreal lake, and paid the band there August 18. We left our teams here, and went on to Lac la Ronge in canoes. We had the government canoe, and we borrowed another from the Hudson's Bay Company, and engaged four Indians, experienced men. We left Montreal lake on August 20, and arrived at Lac la Ronge on 23rd and paid this band on 25th. We left for Pelican Narrows 26th and arrived there on Sept. 1 and at once commenced payments, completing on September 2, and started on our trip home on September 3, and reached Montreal lake on 18th and left on 19th for Prince Albert, and reached there on the morning of the 21st, making forty-two days on the trip, and canoeing thirty days.

We were two days storm-bound going down and equal to five days coming up.

The following were the payments:—

Wm. Charles's, band:—

1 Chief	$ 25 00	
4 Headmen	60 00	
164 at $5	820 00	
		$905 00
Arrears		485 00

Jas. Roberts' band :—

1 Chief	$ 25 00	
4 Headmen	60 00	
474 at $5	2,370 00	
		$2,455 00
Arrears		20 00

P. Ballendine's band :—

1 Chief	$ 25 00	
2 Headmen	30 00	
379 at $5	1,895 00	
		$1,950 00
Arrears		35 00
		$5,850 00
Paid by Agent at Agency		5 00
		$5,845 00
Cash returned to Agent		155 00
		$6,000 00

And $30 returned to be funded for school children. Before returning to Fort Qu'Appelle, I went to the agency with treaty books and had them balanced up and they would be forwarded in the usual way.

The Indians of the northern bands make their living entirely by hunting, and fish is their principal diet. The Montreal Lake band had no gardens, and no potatoes, it seems they could not get seed. I noticed in many places where gardens had been cultivated all grown over with grass.

At Lac la Ronge many of the Indians had gardens and potatoes, and we found good gardens on the Churchill river, also at some of the islands.

At Pelican Narrows some good gardens could be seen, but beyond these gardens, nothing else in the way of farming is done.

Wm. Charles' band and Jas. Roberts' are principally Church of England, and Peter Ballendine's, the majority of the band is Roman Catholic ; a fine new Roman Catholic church had just been completed, the walls are painted white, roof red, there is a tower and bell, and the church has an imposing appearance in the village. These Indians one and all are devoted to their religious duties. They are a nice lot of Indians and live peaceably with each other. They appear to be comfortable and some of them have bank accounts. On our arrival at each of the places, we were received with the firing of guns and the rejoicing was general among men and women, and even the young children were frantic with delight.

The only time these people ever see money is at the treaty payments, not another look even at a dollar bill, until next payments ; as for silver, there is no such thing ever heard of. If one buys a plug of tobacco for 15 cents, he has to take his change of a dollar in goods he does not want.

I have said these Indians attend to their religious duties, and whenever there is a meeting they attend in full force. The four men I had were splendid specimens of the real Indian, they were careful, attentive, cautious and skilful, and I felt they were men that could be trusted, they belonged to the English Church mission. These men met in their little tent every morning and evening, never missed, and had prayers, and there was no ostentation about them, but these hardy men would, when the time, came, quietly walk to the tent and with the greatest reverence, kneel in prayer, the elderest one leading.

If some of our pessimistic friends on Indian missionary work could but witness scenes like these, it would change their views.

The treaty supplies were issued at each place after the payments; these consisted of ammunition, twine, a little flour, bacon, tea, tobacco and soap; a small quantity of flour, bacon and tea was reserved at Montreal lake and Lac La Ronge, for any cases of distress or sickness during winter. At Pelican Narrows, all was issued, as has been the custom.

A supply of medicines is at each point. At Montreal lake Mr. Settee, teacher, takes charge of them, at Lac la Ronge, Rev. Mr. McLennen and Hudson's Bay Company, and at Pelican Narrows the Hudson's Bay Company had charge, but the Rev. Father there, having studied medicine for two years, and being familiar with dispensing, it was considered better to give him charge of the medicines there, as he was willing to perform the work.

Mr. Clare was the opposition trader at these points, but he is now the manager of the Hudson's Bay Company's posts at Montreal Lake and Lac la Ronge, Mr. McDonald, who had been manager for the past ten years, being transferred to Prince Albert.

Before concluding, I wish to say that the Hudson's Bay Company's officials, especially Mr. McDonald and Mr. Belanger and also Mr. Clare, rendered us great assistance, and I wish to thank them for many acts of kindness.

I have, &c.,

ALEX. McGIBBON,
Inspector of Indian Agencies and Reserves.

BRITISH COLUMBIA,
BABINE AND UPPER SKEENA RIVER AGENCY,
HAZELTON, July 3, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit herewith my annual report and statistical statement, also list of government property in my keeping to June 30, 1902.

Location of Agency.—This agency is the most northerly situated, and is bounded towards the north and west by the Northwest Coast agency, towards the south by the Williams Lake agency, and to the east by the Rocky mountains.

For geographical reasons, distinction of separate nations and general characteristics, this agency is treated under two divisions.

THE KITKSUN DIVISION.

The supervision of this part of the district begins from the Kitselas canyon of the Skeena river, and about ninety miles below this place, terminating beyond its head waters, covering a distance of about one hundred and sixty miles.

With the exception of Kitwancool, which lies on the trail to Ayensk, Nass river, and Kisgegas, on the Babine river—three miles beyond its confluence with the Skeena—the other six villages, with their respective reserves, are situate upon the latter river, ending towards its source with Kuldoe, and in the following account will be treated in that order.

KITWANGAR BAND.

Reserve.—The three reserves of this band are situated nearly equally divided on the right and left banks of the Skeena, comprising a total area of three thousand six hundred and fifteen acres.

Vital Statistics.—The population is one hundred and fifty-one, composed of fifty-one men, sixty women and forty children. There were seven births and four deaths, making an increase of three over last year's count.

Health and Sanitation.—The Indians were in the best of health, and in addition to all other means, precautions are taken to have the premises and their environs kept clean, and a good many more of the Indians have been vaccinated

Resources and Occupations.—The main resources and occupations of this band are fishing, hunting and trapping, and cutting cord-wood, and the women and children gather wild berries and dry them for winter use.

Education.—The school is under the tuition of the Anglican Church Missionary Society and is centrally located in the village. During the year a handsome school-house has been erected here and fully equipped by the Rev. A. E. Price, with his usual energy, and in building the Indians showed the result of his instruction.

The school is making good progress and became endowed with the usual grant for day schools.

Religion.—A splendid little church is here auspiciously well attended. In structure, the building mentioned under the preceding caption, becomes a fitting companion piece to the church, which latter is also owned and cared for by the same denomination.

Characteristics and Progress.—Naturally, the Indians of this band are very intelligent, and in progressing otherwise, became especially adept in carpentry.

More land is constantly broken up and the gardens are well cared for.

Kitwankool Band.

Location.—The village of this band, for which a reserve has not yet been apportioned, is the only one of the Kitksun settlements removed from the river's proximity, and is situate on the right bank of the Kitwangar river, twenty-five miles from Kitwangar, and four miles below Lake Kitwankool, and on the trail to Ayensk, Nass river.

Vital Statistics.—The population is sixty-six, consisting of twenty men, nineteen women and twenty-seven children. During the year four births and two deaths occurred, making an increase of two.

Health and Sanitation.—There is no illness to record. Sanitary measures are observed, and more of this band have, additionally, been vaccinated.

Resources and Occupations.—To this band the lake yields an unlimited supply of salmon; hunting and trapping bring good returns, and the gathering of wild berries by the women and children.

Though somewhat isolated, these Indians, like their kindred, display a remarkable facility in seeking opportunities productive of the best results. Generally, during the season, they work in the coast salmon canneries and earn good wages.

Education.—There is no school in this village; some of the children periodically attend school at Kitwangar and others likewise at Kinkolith and Ayensk, on the Nass river.

Religion.—No missionary is stationed here and no church adorns the village, but in this respect the people receive religious instruction in the last above mentioned localities, wherewith they are more or less constantly in touch.

Characteristics and Progress.—The people are industrious and well-meaning. Though formerly somewhat tenacious of old customs, they have made good headway, of late, and are imbued with the resolve of making their mark in the near future by establishing homes in severalty with a purpose denoting agricultural intent.

Kitsegukla Band.

Reserve.—The new and old villages of this band are both located on the left bank of the Skeena, and the former about nine miles above the latter. The two reserves, con-

fined to both sides of the river, have an area of three thousand five hundred and fifteen acres.

Vital Statistics.—The combined population of the two villages is eighty-seven, consisting of thirty-one men, twenty-five women and thirty-one children. There were six births and three deaths, resulting in an increase of three.

Health and Sanitation.—The health of these Indians has been good throughout the past year, and the usual precautions are being taken to sustain it; also more of this band have been vaccinated.

Resources and Occupations.—The principal resources of these Indians are salmon fishing, hunting and trapping. They are occupied in these pursuits and the gathering of wild berries by the women and children; besides attending to their gardens, they chop cord-wood during the winter.

Education.—A school is located, centrally, in the old village. In connection therewith a native Methodist teacher attends to the children. The latter are making fair progress.

Religion.—Most of this band are adherents of the Methodist Church and are engaged on an edifice, which is near completion.

Characteristics and Progress.—These Indians are very industrious and of progressive tendencies, of which the results are everywhere gratifyingly apparent.

Getanmax Band, Hazelton.

Reserve.—The reserve lands of this band are situate, with the exception of a timber reserve, on Two-mile creek, on both banks of the Skeena, and inclusive of Tsitsks, or Hawgilget village—also assigned to this band—and on both banks of the Bulkley river, comprise a total area of three thousand seven hundred and ninety-one acres.

The delta formed by the confluence of the Skeena and Bulkley rivers, whereon the township of Hazelton is located, contains, to the back or east of it, on a plateau—intersecting the delta and its triangle at shorter base from north to south—the old Indian village on the left bank of the former, and on the right bank of the latter the new Indian village, with the agency office at a fair distance between both.

Vital Statistics.—The population, largely composed originally of other villages, numbers two hundred and thirty-nine, and consists of ninety-four men, ninety-five women and fifty children. There occurred nine births and six deaths, making three of the former in excess of the latter, but on account of three adults settling at Glen-Vowell, the population remains the same as last year.

Health and Sanitation.—The health of the Indians has been very good. The usual precautionary measures are being observed, and in addition, more of the people were vaccinated.

Resources and Occupations.—Fishing, hunting and trapping are more and more becoming less of resort as a means for support. Hazelton being the terminus of all communication of the larger part of this district, and the entrepot of supplies for the interior, the Indians, of this reserve, with those of the neighbouring villages, usually find ready employment at high wages. The spare days are given to the attending of their gardens.

Education.—The school here is carried on by the Anglican Church Missionary Society. The parents are taking more interest than formerly to have the children attend, and the latter are making fair progress. During the year a new school-house was built and is located on the northernmost end of the townsite.

Religion.—A new church has been erected here, and the service performed is that of the fore mentioned denomination.

Characteristics and Progress.—The Indians of this band are very intelligent and provident in habits. They have advanced to a great degree in every respect, and adapted themselves to all work of a general description and their services are much in demand by the whites.

Chief Bull's Head and Wife in their New House, built 1902, Sarcee Agency, near Calgary, Alta.

Glen-Vowell Band.

Reserve.—The village of this band is located about four miles above here, on the special reserve of Sikedach, on the right bank of the Skeena, and contains nine hundred acres.

Vital Statistics.—The population—of which fifty-three originally belonged to Kispaiax—is seventy-three, made up of nineteen men, nineteen women and thirty-five children. There have occurred during the past year, five births and no deaths; making a natural increase of five.

Health and Sanitation.—The health of the Indians has been excellent; their settlement being located on virgin soil, no doubt, largely contributed to that result. The necessary precautions are observed, and more of the people were vaccinated.

Resources and Occupations.—Besides fishing and hunting and keeping stock, as resources, the people avail themselve of all opportunities for earning good wages, and improving their homes.

Education.—The school-house, here, is centrally located; the teacher is taking great pains with the children under his care.

Religion.—Adjacent to the school is located a meeting-house conducted with the Salvation army form of service.

Characteristics and Progress.—The people are very law-abiding and industrious. A large tract of land has been cleared. Much of the land has been put into pasture and garden produce, thereby substantially promoting public good. Also two dozen of fruit-trees were planted.

Kispaiax Band.

Reserve.—The village of this band is situated about eight miles above here, on the right bank of the Skeena and on the left bank at the mouth of the Kispaiax river. The main reserve is allotted to that side of the former river, with a special reserve in westerly direction of the village, and inclusive of Sikedach, connected with the preceding band, contains an area of three thousand seven hundred and twelve acres.

Vital Statistics.—This band numbers two hundred and six: seventy-eight men, seventy-nine women and forty-nine children. I deemed it proper to include here for this year seventeen of Kisgegas and thirteen of Kuldoe, originally of those localities and previously thus classed, respectively. There were eleven births and seven deaths, making a natural increase of four.

Health and Sanitation.—The health of these Indians has been very good. The usual precautions are taken to preserve it; also some more of the population were vaccinated.

Resources and Occupations.—Hunting and trapping in winter and catching salmon are the main resources. The occupations of this band are as varied as they are remunerative in good wages. On account of its location it was especially favoured in working for the Dominion government telegraph service, mainly by supplying the stations north of here during the past winter.

Education.—School is still being taught in a house improvised for that purpose and centrally located in the village. The pupils are making fair progress.

Religion.—A new church is completed and equipped and is being well attended. The people belong to the Methodist Church. Much is here being done by Dr. H. C. Wrinch in connection therewith during the spare moments from his arduous duties, professionally.

Characteristics and Progress.—Once very obdurate of disposition, this band has readily accommodated itself to the conditions elsewhere prevailing, and is now by comparison excelling some of the others. Many improvements are everywhere noticeable, which are energetically and constantly being augmented.

Kisgegas Band.

Reserve.—The locality occupied by this band, is about sixty-eight miles to the north of here, on the right bank of the Babine river, and three miles above its confluence with the Skeena. The reserve embraces both sides of the Babine river with an area of two thousand four hundred and fifteen acres.

Vital Statistics.—This band, numbering two hundred and forty-six, consists of eighty-five men, ninety-three women and sixty-eight children. Of its population seventeen were credited to Kispaiax this year on the reasonable grounds of having become located there. Nine births and six deaths occurred, resulting in a natural increase of three.

Health and Sanitation.—The Indians' health has been very good. Sanitary measures are observed, and an additional number of Indians and their children were vaccinated.

Resources and Occupations.—The resources of this band are: catching salmon especially in the canyon below the village, hunting and trapping. This band's hunting and trapping grounds extend far beyond the head-waters of the Skeena and Babine rivers, Bear lake, also to Stikine. These Indians mostly depend on those resources and till their potato-patches. The women, accompanied by their children, gather wild berries and dry them for winter use.

Education.—The mission-building is conveniently located southwest of the old village, and is likewise used for school purposes. The children are making fair progress.

Religion.—The Indians here are under the religious guidance of the Anglican Church Missionary Society.

Characteristics and Progress.—These Indians are very intelligent and industrious. Those of this band living around Bear lake seldom come in. As a whole, much is gained in the betterment of their condition in general.

Considerable interest is shown in growing potatoes, and new land is steadily being broken up for this purpose.

Kuldoe Band.

Reserve.—The village of this band is situated on the right bank of the Skeena river and is connected with Kisgegas, on the Babine river, by a very rough trail of about twenty-five miles across the mountains. The reserve contains four hundred and forty-six acres, almost equally divided in area on both sides of the Skeena.

Vital Statistics.—The band numbers thirty-eight, composed of ten men, twelve women and sixteen children. As in the preceding band, so here, thirteen of its members are this year being counted for like cause in that of Kispiax. There were five births and one death; result, natural increase of four.

Health and Sanitation.—The health of this band has been very good. The usual sanitary measures are observed and more of the people have been vaccinated.

Resources and Occupations.—The river furnishes a good supply of salmon. To so few people, the large hunting and trapping grounds give large returns. Besides growing potatoes and gathering wild berries for winter use, the occupations are still only such as suit the resources.

Education.—There is no school at this village, but the children periodically attend that of Kisgegas.

Religion.—There is no church, but the people take an interest in Christian teaching.

Characteristics and Progress.—The people are law-abiding and of an obliging disposition; though remotely situate, they are striving for the better by enlarging their potato-grounds, attending to them and in breaking up more land.

Remarks.

The following applies to the bands of the forementioned division, collectively :—

Reserves.—The reserves of this division contain an aggregate of seventeen thousand four hundred and ninety-four acres of agricultural, grazing, hay and timber land.

Vital Statistics.—The total population is one thousand one hundred and six men, women and children. During the year fifty-six births and twenty-nine deaths occurred, making a natural increase of twenty-seven : and with two families coming from Bear lake, consisting of eleven, and one family from the coast of four persons, gives the total increase of thirty-nine over last year's count; three being counted in the population of Glen-Vowell.

Tribe or Nation.—This race is identical with the Tsimpsians of the coast. The latter have sprung from a large number of Kitksuns, who abandoned their villages on the Skeena, the traces of which are still to be seen, made their way to the coast and thenceforth obtained the name Tsum-Ksun or Tsimpsian, that is, people of the Skeena.

Health and Sanitation.—The health of the Indians was very good. No trace of any contagion was met with. Cases of illness are being treated by Doctor Horace C. Wrinch, now resident of Hazelton. His services are invaluable to the Indians; the lives of many were saved by surgical operations with the desired effects in every instance of successful termination. Attention has been given to cleanliness of person, premises and their surroundings. Many of the Indians have, as usual, been vaccinated.

Buildings.—All buildings, of late years erected, are of modern pattern with more than one room. Care is taken to have them placed on dry and healthy ground.

Stock.—Horses and cattle wintered well and without loss. Much interest is being evinced to invest in cattle, and better provision for same is made from year to year.

Farming Implements.—The implements in use are still principally those adapted for clearing and gardening.

Education.—The schools are being considered more of avail, and better results obtain. Greater interest is shown by parents to have their children attend them.

Religion.—With the exception of the old people, still suspicious of new situations, the population, generally, have embraced the Christian faith.

Characteristics and Progress,—By nature, the Indians are industrious, ambitious and persevering. Their miscellaneous earnings they invest to the best advantage on their new homes in severalty, which are constantly being improved. All the women, not beyond middle age, have become adepts in sewing, mending, knitting, washing, cooking, baking good yeast bread, and in the way of ordinary housekeeping.

Temperance and Morality.—Regarding temperance, very little indeed is to be complained of.

Concerning morality, generally, their conduct is good.

HAGWILGET DIVISION.

Location.—The area under this division begins within three miles to the southeast of Hazelton and extends in that direction for a distance computed at three hundred and twenty-five miles, and ends at Fort George, on the Fraser river.

Within its radius are seventeen villages under the Babine and Carrier groups, respectively. Besides these, it contains two nomadic bands of Sikanees and two semi-nomadic bands of Na-anees. They are all of the Roman Catholic faith, and belong to the Dené nation.

In proceeding with the following, I deem it admissible to reserve for the summing up in conclusion, remarks about identical features in all localities.

Babine Group.

Hagwilget Village Band.

Reserve.—The village of Hagwilget or Tsitsk—the latter its Kitksun appellation—is located three miles southeast of Hazelton, on the lofty left bank of the Bulkley river. The reserve comprises both sides of that river, and contains an area of four hundred and forty-three acres, which is assigned to the Getanmax (Hazelton) band, for reasons minutely given in my report of 1899.

Vital Statistics.—The population is one hundred and sixty, composed of fifty-nine men, fifty-seven women and forty-four children. There were four births and three deaths, making an increase of one.

Moricetown Band.

Reserve.—The village of this band is situated on the left bank of the Bulkley river, and at its main canyon.

In area the reserve is almost evenly divided on both sides of that river, and contains one thousand six hundred and ninety-three acres.

Vital Statistics.—This band numbers one hundred and fifty-eight :—fifty-six men, fifty-six women, forty six children. There were five births and three deaths, resulting in an increase of two.

Fort Babine Band.

Reserve.—The village is situated on the right shore of the Babine lake, near its discharge, with a total reserve area of two thousand eight hundred and nine acres.

Vital Statistics.—This band numbers one hundred and forty-eight, with fifty-five men, fifty women and forty-three children. During the year seven births and four deaths occurred, making an increase of three.

Old Fort Babine Band.

Reserve.—The village and reserve are on the right shore of the Babine lake. The reserve contains an area of one thousand three hundred and thirteen acres.

Vital Statistics.—The population is one hundred and forty-two, consisting of forty-six men, forty-nine women and forty-seven children. There were six births and three deaths, giving an increase of three.

General Remarks.

The remarks under the following headings apply to all of the preceding bands :—

Nation.—They are the Dené, of the Babine group.

Health and Sanitation.—The Indians enjoyed good health, and better sanitary measures are being observed ; also more of the people were vaccinated.

Resources and Occupations.—The resources of these Indians are hunting, trapping and fishing, and those of the villages of Hagwilget and Moricetown engage in packing with horses, and in mining for others to some extent.

Buildings.—The buildings erected of late years are of modern pattern and are placed in healthy localities.

Stock.—The stock wintered well and without loss.

A fair amount of provender is being put up by way of hay, obtained at the former two villages off their meadows, and in the latter too, from the large flats on the margin of the lake.

Farming Implements.—With the exception of scythes and hand-rakes, no other implements are used for that purpose, except such for gardening and clearing land.

Education.—There are no schools, but the Roman Catholic clergy have taught the people the use of a syllabary, in their own language, as a means for communication and keeping their accounts.

Religion.—The people are all of the Roman Catholic faith, and have a church in each of their respective villages.

Characteristics and Progress.—The people are fairly industrious and faithful adherents of their church. They steadily acquire more provident habits and are improving their condition, to which the attention paid to raising potatoes and other root crops, greatly contributes.

Temperance and Morality.—In these matters the Indians of this group deserve commendation.

Carrier Group.

Yucutce Band.

Reserve.—The village and reserve of this band are located at the head of Stuart's lake (Fond du Lac) on the intervening nine miles between Babine and Stuart's lakes, or portage. The reserve consists of three hundred and seventy-two acres.

Vital Statistics.—This band numbers seventeen: five men, five women and seven children. There were no births, but there was one death.

Taché Band.

Reserve.—The village and reserves are situate on the left bank of Stuart's lake, with the former at the mouth and left bank of the Taché river. The reserve area amounts to two thousand and ninety acres.

Vital Statistics.—The population is fifty-three, composed of fifteen men, seventeen women and twenty one-children Eight births and three deaths occurred, resulting in an increase of five.

Pintce Band.

Reserve.—The village and reserve of this band are on the left bank of Stuart's lake, and at the mouth and right bank of Pintce river. The reserve contains an area of eight hundred and fifty-two acres.

Vital Statistics.—The band numbers forty-three, consisting of fourteen men, fifteen women and fourteen children. There were two births and four deaths, making a decrease of two.

Grand Rapids Band.

Reserve.—The village and reserve are on the right bank of the Taché river, at the point commonly called Trembleur river. The reserve area is five hundred and eighty-five acres.

Vital Statistics.—The population is twenty, made up of five men, five women and ten children. There occurred five births and one death, result, increase four.

Tsistlainli with Tsisli Band.

Reserve.—The two villages and reserves of these, the people of one and the same band, are at the head of Trembleur lake and left bank and mouth of Tatla river. The reserves contain an area of one thousand two hundred and ninety-one acres.

Vital Statistics.—The population is thirteen, composed of five men, four women and four children. There was one birth and one death during the year.

Stuart's Lake Band.

Reserve.—The village and reserves are situate on the left shore of Stuart's lake, and near its discharge, Stuart's river. The reserve area amounts to two thousand eight hundred and eighty-four acres.

Vital Statistics.—The people of this band number one hundred and seventy-eight, and consist of sixty-six men, sixty-three women and forty-nine children. There occurred thirteen births and seven deaths, resulting in an increase of six.

Stella Band.

Reserve.—The village and reserve of this band are on the right bank of the Stella river and near its discharge into Fraser's lake. The reserve comprises an area of two thousand and seventy-seven acres.

Vital Statistics.—This band numbers forty-two, and is made up of twelve men, thirteen women and seventeen children. There were three births and one death, giving an increase of two.

Fraser's Lake Band.

Reserve.—The village and reserve are on the left shore of Fraser's lake, and at its discharge, the Natleh river. The reserve area consists of one thousand nine hundred and forty-nine acres.

Vital Statistics.—The population of this band is fifty-three, and is composed of sixteen men, sixteen women and twenty-one children. There occurred six births and two deaths, making an increase of four.

Stony Creek Band.

Reserve.—The village is located on the right bank of Stony creek, and the reserve on both of its banks extending down to its discharge into Noolke lake. The reserve amounts to seven thousand three hundred and seventy-three acres.

Vital Statistics.—This band numbers one hundred and one, consisting of thirty-seven men, thirty-seven women and twenty-seven children. There were five births and two deaths, giving an increase of three.

Fort George Band.

Reserve.—The village is on reserve No. 1, on the right bank of the Fraser river. No. 2 is also located on that side of that river. No. 3 is located on the left bank of the Nechaco river, with No. 4 on the latter's right bank, and also on the right bank and mouth of Mud river, one of its eastern affluents. In area they amount to four thousand two hundred and twelve acres.

Vital Statistics.—The population of this band is one hundred and twenty-five, composed of forty-six men, forty-five women and thirty-four children. Four births and one death occurred, resulting in an increase of three.

Tsistlathu Band.

Reserve.—Reserve No. 1 is located on the right bank of the Fraser river; No. 2, on the left bank of the Blackwater river, and No. 3, on the eastern shore of Nattesley or Bobtail lake: altogether amounting in area to five hundred and thirty-seven acres.

Vital Statistics.—This band numbers seventy-four, made up of twenty-eight men, twenty-six women and twenty children. There were three births and five deaths, making a decrease of two.

McLeod's Lake Band.

Reserve.—The village is located on the western shore of McLeod's lake, and the reserve on both banks of Long river. The reserve contains an area of two hundred and eighty-six acres.

Vital Statistics.—The population is ninety-three, consisting of twenty-seven men, twenty-nine women and thirty-seven children. There occurred four births and two deaths, giving an increase of two.

Fort Graham Band of Sikanees.

Location.—This nomadic band of Indians congregates and camps during the winter in the vicinity of Fort Graham on the Findley river.

Vital Statistics.—It numbers ninety-five, composed of thirty-two men, thirty-one women and thirty-two children. Two births and two deaths were reported of this band.

Connelly Lake Band of Sikanees.

Location.—This other nomadic band of Indians goes into winter-camp on the western bank of Lake Connelly.

Vital Statistics.—Its population is one hundred and twenty-one, consisting of forty-six men, forty-six women and twenty-nine children. Eight births and five deaths resulted in an increase of three.

Connelly Lake Bands of Na-anees.

Location.—The hunting and trapping grounds of these semi-nomadic bands of Indians are to the north of Lake Connelly. In winter they meet and camp on that lake.

Vital Statistics.—These two bands number one hundred and fifty-six, and are made up of fifty-seven men, fifty-three women and forty-six children. Among them are reported to have occurred seven births and three deaths, making an increase of four.

Remarks Concerning Hagwilget Division.

Reserves.—The reserves of this division aggregate a total of thirty thousand two hundred and seventy-two acres.

Population.—The population, all told, numbers one thousand seven hundred and ninety-two, showing an increase of forty in this division over last year's count.

Tribe or Nation.—They are of the Dené nation, often indicated by 'Tenne,' but this latter as a word, an idiom, as a suffix means only 'people,' or 'inhabitants,' which when suffixed to the name of a locality is contracted into 'tenne,' as in Nakoozétenne, the people of Stuart's lake. The Sikanees and western Na-anees can also be classed as part of the Carrier group and of the Dené nation.

Health and Sanitation.—The health of the Indians was exceptionally good. This condition with attending results, can plainly be traced to the after-effect of the influenza of a few years ago becoming spent. No semblance of any contagion was experienced. The Indians are more careful in regard to general cleanliness, and many more of them have been vaccinated.

Resources and Occupations.—The main resources are hunting, trapping and fishing. After a shortage for several years in salmon, these bands availed themselves of the opportunity of an immense supply during last season. At Stuart's and Fort George, the Indians earn some money by canoeing and packing with their horses; the latter as an occupation, likewise applies to those of Stony creek. All of the bands are, especially of late, taking much interest in working their gardens.

Buildings.—They are more exact in the construction of their houses and as to suitable localities.

Timber and Bush Fires.—In prevention of these, the Indians have become most cautious. Fire notices are posted in the most conspicuous localities. In the few instances where timber fires did become in evidence, they were put out in their incipiency by timely rains.

Stock.—All of the Indians' stock wintered well and without loss, and more care is bestowed upon it by way of provender and shelter.

Farming Implements.—Their implements consist still mainly of scythes, hand-rakes and such other implements useful in gardening, haying and breaking up land.

Education.—There are no schools on any reserve of this group or division, but the people have learnt to use the syllabic writing in their own language.

Religion.—All the Indians of this division belong to the Roman Catholic Church. At Stuart's lake is a large church and mission, and there are also churches at Tache, Pintce, Fraser's lake, Stella, Stony creek, Fort George, McLeod's lake and Blackwater.

Characteristics and Progress.—The Indians are of a good disposition, law-abiding and hospitable. Were the opportunities equal to their ambition and good intentions in expedient, readier results would be the outcome.

In being possessed of cattle, and by increasing the extent and yield of their gardens they are making fair progress.

Temperance and Morality.—It redounds to the credit of the Indians that not a single instance of intoxication has occurred in this division during the year. This fact, the result of a promise to their bishop including the Stuart's lake village, is worthy the more of commendation. Considered morally, the Indians are very mindful of their conduct.

General Remarks.

With regard to peace, the maintenance of order, temperance and morality among the Indians of the latter division, the services of the Rev. Father A. G. Morice, O.M.I. cannot easily be over-estimated.

As a compliment to his good work, we had last year a visit from the Right Rev. A. Dontenwill, O.M.I., D.D., bishop of New Westminster, B.C. Through the seemingly irresistible magnetism of his charming personality that gentleman caused the destruction by fire of those ceremonial paraphernalia which still bound the inhabitants of two villages to the customs and ideas of prehistoric days and prevented them from entering into the spirit of full civilization.

I have, &c.,

R. E. LORING,
Indian Agent.

British Columbia,
Cowichan Agency,
Quamichan, August 15, 1902

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report and statistical statement for the year ended June 30, 1902.

Agency.— This agency is situated on the east coast of Vancouver island and extends from Cape Mudge on the north to Sooke on the south, including the reserves on the different islands in the gulf of Georgia.

The total area of the reserves in this agency is nineteen thousand eight hundred and ninety-three acres, forming a portion of the territory occupied by the Cowichan nation, whose language and influence formerly extended to the bays and sounds on the American side of the Gulf and up the Fraser river as far as Yale, which re-serves are occupied by the following bands :—

Sooke Band.

Reserve.—The reserve of this band is situated on the straits of Juan de Fuca about twenty-five miles southwest of the city of Victoria, the area of which is one hundred and sixty-six acres.

Vital Statistics.—The population is twenty-three, consisting of six men, seven women and ten children.

Health and Sanitation.—These Indians all enjoy good health and keep their premises clean and tidy.

Resources and Occupations.—The Indians are chiefly engaged in agriculture and fishing. During the summer they go to the Fraser river for the salmon fishing, and in the fall to the hop-fields in the State of Washington.

Buildings, Stock and Farming Implements.—The Indians have all good implements and stock. Their buildings, including houses, barns and stables, are in good repair. Their stock is well cared for.

Religion.—These Indians are all Roman Catholics.

Education.—There are no schools on the reserve on account of the small number of children.

Characteristics and Progress.—These Indians are industrious and law-abiding, devoting more attention to the improvement of their land than formerly.

Temperance and Morality.—These Indians are all temperate and moral.

General Remarks.—This band is recovering from the effects of the loss of the schooner *Earle* by which nearly all the male members of the band were drowned several years ago.

Cheerno Band (Beecher Bay).

Reserve.—This reserve is situated on the straits of Juan de Fuca, about fifteen miles southwest of Victoria, and contains an area of seven hundred and seventy-nine acres. As most of this reserve is rocky, very little of it is fit for cultivation.

Vital Statistics.—The total population is forty-eight, being made up of thirteen men, nineteen women and sixteen children. During the year there have been no births and four deaths, making a decrease of four.

Health and Sanitation.—The health of the band has been good. The dwellings have been kept fairly clean.

Resources and Occupations.—These Indians do a little farming and fishing for the Victoria market. A few go over to the hop-fields in the State of Washington.

Buildings, Stock and Farming Implements.—The dwellings are fairly good. The Indians have a few cattle and horses of medium quality. They own a few farming implements which are, however, of good quality.

Education.—There is no school on this reserve. A few of the children receive rudimentary education from the white settlers living near the reserve.

Religion.—These Indians are principally Roman Catholics; the others pagans and Shakers.

Characteristics and Progress.—These Indians are fairly industrious and law-abiding, with a tendency to progress.

Temperance and Morality.—Very few of these Indians are addicted to intemperance. They are hardly what is termed good moral Indians.

Songhees Band.

This band comprises the following sub-families, Esquimalt and Discovery island Indians, as well as the Songhees Indians.

Reserves.—These reserves are situated on Victoria harbour, Esquimalt harbour and islands in the straits of Juan de Fuca, the total area of which is three hundred and six acres. Very little of the land is fit for agricultural purposes.

Vital Statistics.—The total population numbers one hundred and fifty-three, consisting of forty men, forty-five women and sixty-eight children. During the year there have been two births and four deaths.

Health and Sanitation.—The health of these Indians is fairly good. Living as they do near the city of Victoria, they keep their occupied houses in good condition and neatly.

Resources and Occupations.—Fishing and working for white men in the city of Victoria form their chief means of livelihood.

Buildings, Stock and Farming Implements.—Their dwellings and outhouses are in fairly good condition. Little, if any stock is kept by these Indians. They have few farming implements.

Education.—There is a school on this reserve, which is fairly well attended.

Religion.—The Indians are all either Roman Catholics or Methodists.

Characteristics and Progress.—These Indians are fairly industrious and law-abiding and show a desire to improve their condition.

Temperance and Morality.—These Indians are fairly temperate and moral, but situated near the city of Victoria, unfortunately a few are addicted to intemperate habits.

Bands in Saanich District.

Reserves.—The following bands occupy reserves in Saanich district viz.: the Malakut, Tsekum, Pauque-chin, Tsartilp and Tsawout, the total area of the said reserves being three thousand three hundred and eighteen acres.

Vital Statistics.—The total population numbers two hundred and sixty-three; consisting of sixty-eight men, eighty-three women and one hundred and twelve children. During the year there have been eight births and eight deaths.

Resources and Occupations.—The chief occupations of the Indians are: general farming, fishing and hop-picking, also working among the adjoining white settlers.

Buildings, Stock and Farming Implements.—Some of these Indians have good comfortable dwellings fairly well furnished and their outbuildings are fairly good. The stock are of improved breeds and fairly well cared for. Their implements, of which they have a good supply, are in good condition.

Education.—There are two schools provided for these Indians, one situated on the Tsawout reserve, the other at Tsartilp. They take great interest in education.

Religion.—These Indians are all Roman Catholics and attend church very regularly.

Characteristics and Progress.—The majority of these Indians are industrious and law-abiding; unfortunately a few of them get into trouble through violation of the law.

Temperance and Morality.—A few cases of drunkenness occur when the Indians get into the city of Victoria, where they are exposed to temptation by Chinese whisky-peddlars. As a whole they are well behaved.

Bands in Cowichan District.

Reserves.—The following bands occupy reserves in Cowichan valley, which is situated on the east coast of Vancouver island, forty miles north of the city of Victoria, viz.: Kilpaulus, Comeakin, Clem-clem-a-lits, Khenipsin, Koka-silah, Quamichan and Somenos. The total area of the reserves of said bands is six thousand and eighty-eight acres.

Vital Statistics.—The seven bands have a combined population of six hundred and ninety-two; consisting of two hundred and eight men, two hundred and fourteen women and two hundred and seventy children. During the past year there have been nine births and sixteen deaths.

Health and Sanitation.—The health of these Indians has been fairly good; there have been no contagious diseases nor epidemics among them during the year, the chief maladies being scrofula, consumption and rheumatism. There being an abundant supply of fresh water flowing through the reserves, the sanitary conditions are good.

Resources and Occupations.—The chief occupation of these Indians is farming, although during the summer and autumn they earn a great deal of money from the fisheries on the Fraser river and from the hop-fields in the State of Washington. They also work for the white farmers in the neighbourhood and thereby earn a good deal.

Buildings, Stock and Farming Implements.—The progress in the character and number of their buildings has continued, and their dwelling-houses are becoming more comfortable.

Their stock is very good: the horses are of larger and better breed than formerly; the cattle are improving fast in quality and quantity. Several of the Indians own mowers, reapers, binders and threshing-machines, both steam and horse power, with which they earn a great deal of money harvesting and threshing the crops of the white farmers in the neighbourhood. The farm machinery used by these Indians is of the most improved pattern.

Education.—There are two schools provided for these Indians: one situated in the Somenos village, the other between the Clem-clem-a-lits and Quamichan villages. Both schools are doing good work, and the pupils show good progress. The older children attend the Kuper Island industrial school.

Religion.—The majority of these Indians are Roman Catholics.

Characteristics and Progress.—The Indians in this district are industrious and law-abiding, seldom violating it, and as a whole are very progressive.

Temperance and Morality.—Taking them all round, these Indians are of temperate habits, a few being fond of liquor. They are very moral and compare favourably with any Indians on the coast.

Hellelt Band.

Reserves.—One reserve is situated on the south bank of the Chemainus river about a mile and a half from its mouth, and another on an island at the mouth of the same river. The two reserves contain a combined area of four hundred and twenty-seven acres.

Vital Statistics.—The population numbers twenty-nine, consisting of eight men, ten women and eleven children. During the year there have been four births; no deaths.

Health and Sanitation.—These Indians have been very healthy; no sickness of a contagious nature has prevailed. They all live during the summer months in their private houses.

Resources and Occupations.—The Indians of this band engage chiefly in farming and fishing, and they earn some money by clearing land for the white settlers.

Buildings, Stock and Farming Implements.—The buildings are neat and of good construction; the Indians have a few barns or stables. They have not much stock, but what they have is well taken care of; so also are their farm implements.

Education.—There is no school on this reserve. As soon as the children are old enough, they attend the Kuper Island industrial school.

Religion.—These Indians are either Roman Catholics or semi-pagans.

Characteristics and Progress.—They are industrious and seldom get into trouble.

Temperance and Morality.—They are a temperate and moral band. A few occasionally indulge in liquor.

The Siccameen and Kulleets Bands.

Reserve.—The main reserve is situated between Oyster harbour and Chemainus bay. One reserve is on the western shore of Oyster harbour, a fishing station on the left bank of the Chemainus river near its mouth, the total area of which is three thousand and eighty-four acres. There are no lines dividing the lands of the two bands.

Vital Statistics.—The population is one hundred and four, made up of thirty men, thirty-two women and forty-two children. There have been two births; no deaths during the year.

Health and Sanitation.—Like the other reserves, there is a good supply of clear spring water located on the beach. There has been no sickness among the Indians of this band during the year.

Resources and Occupations.—These Indians do very little farming, fishing and boat-building being their chief occupations. A number are employed in the town of Ladysmith.

Buildings, Stock and Farming Implements.—These Indians keep very little stock, but what they have they take good care of. Their houses are in pretty good condition, especially the larger rancherie houses.

Education.—There is no school on this reserve. The children of school age go to the industrial school on Kuper island.

Religion.—These Indians are all Roman Catholics.

Characteristics and Progress.—These Indians are industrious and law-abiding. Some of them are above the average in intelligence.

Temperance and Morality.—These Indians are temperate and moral, seldom getting into trouble.

Lyacksun Band.

Reserve.—This reserve is situated on Valdez island and consists of three reserves, which have a combined area of one thousand eight hundred and forty acres.

Vital Statistics.—The population is eighty-six, consisting of nineteen men, twenty women and forty-seven children During the year there have been no births and two deaths.

Health and Sanitation.—These Indians have enjoyed very good health, due in a great measure to their location.

Resources and Occupations.—This reserve is nearly all rock and heavy timber. The Indians do very little farming their principal occupations being fishing and boat building.

Buildings, Stock and Farming Implements.—The buildings are all well kept and of superior construction, in fact none of the Indians live in the old-fashioned rancherie houses. There is more stock kept this year than last year and they have purchased at their own expense thorough-bred bull calves. They have not many farming implements, but such as they have are of superior quality.

Education—There is no school on this reserve. Children of school age attend the Kuper Island industrial school.

Religion.—All these Indians are either Roman Catholics or pagans.

Characteristics and Progress.—These Indians are industrious, law-abiding and very thrifty.

Temperance and Morality.—Situated as they are at some distance from a town and its demoralizing influences, they are temperate and moral.

Penelakut Band.

Reserve.—This band includes the Llmalche and Tsussie bands. Their reserve is situated on Kuper island and Tent island and the northwest extremity of Galiano island and a small reserve at the mouth of the Chemainus river, forming a total area of two thousand three hundred and thirty-two acres.

Vital Statistics.—The total population numbers two hundred and twenty-two; consisting of sixty-seven men, sixty-six women and eighty-nine children. During the year there have been three births and five deaths.

Health and Sanitation.—The general health of these Indians is good. The sanitary conditions are excellent.

Resources and Occupations.—Fishing and boat-building are the chief occupations of these Indians. Not very much farming is done by them.

Buildings, Stock and Farming Implements.—The buildings are in pretty fair condition. There is little, if any, stock kept. They have very few farming implements.

Education.—The Kuper Island industrial school is situated on this reserve.

Religion.—All the Indians on this reserve are Roman Catholics.

Characteristics and Progress.—The condition of these Indians has greatly improved, which is due in no small measure to the influence of the missionaries on the island.

Temperance and Morality.—These Indians are fairly temperate and moral.

Nanaimo Band.

Reserve.—This reserve consists of a reserve on the Nanaimo harbour and one on the Nanaimo river with a small fishing station on the southern shore of Gabriola island, forming a total area of six hundred and thirty-seven acres.

Vital Statistics.—The population is one hundred and sixty-five, consisting of twenty-eight men, thirty-eight women and ninety-nine children. During the year there have been two births and three deaths, making a decrease of one.

Health and Sanitation.—The health of these Indians has been very good during the past year; no epidemics occurring among them.

Resources and Occupations.—The Indians of this band farm, they work in the coal mines and also earn a lot of money trimming coal in the ships.

Buildings, Stock and Farming Implements.—There is great improvement in the buildings of this band. The stock is of better quality and is increasing in number. They are taking more care of their implements than formerly.

Education.—They are provided with a school, and take great interest in educational matters.

Religion.—These Indians are all Methodists.

Characteristics and Progress.—These Indians are industrious and law-abiding and are anxious to improve their condition.

Temperance and Morality.—Considering their proximity to the town of Nanaimo, they are fairly temperate and moral.

Snonowas Band (Nanoose).

Reserve.—This reserve is situated on the southern shore of Nanoose harbour and has a total area of two hundred and nine acres.

Vital Statistics.—The population is thirteen, being four men, seven women and two children. No births nor deaths have occurred during the year.

Resources and Occupations.—The principal employment of these Indians is fishing and the manufacture of dogfish oil.

Health and Sanitation.—These Indians are fairly healthy. The sanitary conditions are good; their places are kept fairly clean.

Education.—There is no school on the reserve.

Religion.—These Indians are either Methodists or pagans.

Characteristics and Progress.—These Indians are industrious and are progressing.

Temperance and Morality.—They are not very temperate, being rather addicted to the use of intoxicating liquors.

Qualicum Band.

Reserve.—This reserve is situated at the mouth of the Qualicum river. It has an area of one hundred and ninety-seven acres.

Vital Statistics.—The population of the band is thirteen, consisting of four men, four women and five children. There have been no births nor deaths during the year.

Health and Sanitation.—These Indians are fairly healthy. The sanitary conditions are good.

Resources and Occupations.—They do a little farming, a little fishing; they earn money by acting as guides for hunting and prospecting parties.

Buildings, Stock and Farming Implements.—Their buildings are fair; stock not bad. The implements are well cared for.

Education.—There is no school on this reserve.

Religion.—All these Indians are Methodists.

Characteristics and Progress.—These Indians are doing better than in previous years.

Temperance and Morality.—The Indians on this reserve are temperate and moral.

Comox Band.

Reserve.—This reserve is situated on the northern shore of Comox harbour and on the left bank of the Puntledge river at its confluence with the Tsolum river. In connection with the reserve is a grave-yard on Goose spit, Comox harbour. The area of the reserve is three hundred and seventy-eight acres.

Vital Statistics.—The population numbers fifty-nine, twenty-two men, nineteen women and eighteen children. During the year there have been three deaths and one birth, making a decrease of two.

Health and Sanitation.—The health of the band has been good. There have been no epidemics of any kind during the year. The sanitary conditions are fair.

Resources and Occupations.—The chief occupations are farming, fishing and hunting.

Religion.—Sixty of these Indians are Presbyterians, and one is a Roman Catholic.

Education.—There is no school on this reserve.

Characteristics and Progress.—These Indians are industrious and law-abiding and have made more progress during the past year than any previous year.

Buildings, Stock and Farming Implements.—They have a few buildings, which are in fair condition. Their stock is of medium quality. They have not many farm implements.

Temperance and Morality.—These Indians are not much addicted to intoxicating liquors. Their morality is on a par with that of Indians in other localities.

Galiano Island Band.

Reserve.—This reserve is located on the northwest extremity of Galiano island and is included in the area of the reserve of the Penelakut band.

Vital Statistics.—The population consists of eight men, eight women and fifteen children, thirty-one in all. There have been no births nor deaths during the year.

Health and Sanitation.—These Indians have enjoyed good health. The sanitary conditions are fair.

Resources and Occupations.—Fishing and boat-building are the chief occupations. They do no farming, but cultivate a few gardens.

Buildings and Stock.—There are a few buildings on this reserve, but no stock.

Education.—The children attend the Kuper Island industrial school.

Religion.—All the Indians of this band are Roman Catholics.

Characteristics and Progress.—These Indians are industrious and law-abiding.

Temperance and Morality.—The Indians are temperate and moral.

Mayne Island Band.

Reserve.—This reserve is situated on the northwest extremity of Mayne island. The area of the reserve is included in that of the bands in the Saanich district.

Vital Statistics.—The population numbers twenty-seven, consisting of five men, five women and seventeen children. During the year there have been two births and two deaths.

Health and Sanitation.—The health and sanitary conditions of the Indians on this reserve are good.

Resources and Occupations.—Fishing for the Victoria and Vancouver markets is their only occupation.

Buildings, Stock and Implements.—This being only a fishing station, there are only a few cedar slab shanties on the reserve. There are no stock and implements for the same reason.

Education.—There is no school on this reserve.

Religion.—All the Indians of this band are Roman Catholics.

Characteristics and Progress.—These Indians are industrious and make a good living by fishing.

Temperance and Morality.—They are temperate and moral.

Cowichan Lake Band.

This reserve is situated on the northern shore of Cowichan lake, near its outlet. It has a total area of one hundred and thirty acres. There is at present only one man and one woman occupying this reserve, and that only during the summer months. They spend the winter among their relations on the west coast of the island. There have been no deaths nor births during the year. In religion these Indians are Methodists.

General Remarks.

The Indians in this agency are industrious and becoming more independent every year. The severe competition in the labour market, due to competition with Orientals, has in a great measure forced the Indian to work his land for a living instead of working away from his home, as formerly. The immediate result of this condition of affairs is that more improved machinery is bought, for instance, steam threshers, self-binders, mowers and reapers, and in the Cowichan district the bulk of the white man's crops are harvested and threshed by the Indians. Their stock has greatly improved in quality, due in a great measure to the introduction of improved breeds by the different breeders' associations in the province whose efforts the Indians appreciate and take advantage of.

In matters of education and morality, great praise is due to the various missionaries established throughout the agency.

Although the majority work their land, yet a great many find profitable employment in the several new towns springing up in consequence of the activity of the mining and lumbering industries.

I have, &c.,

W. R. ROBERTSON,
Indian Agent.

British Columbia,
Fraser River Agency,
New Westminster, August 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to forward my annual report for the year ended June 30, 1902. The statistical statement will be forwarded as soon as completed

Tribe or Nation.—All the Indians in this agency belong to branches of the Salish nation.

Bands in the Chilliwack District.

Reserves.—The following bands occupy reserves in close proximity to each other in the Chilliwack district, forming a total area of three thousand six hundred and forty-one acres, viz.:—Aitchelitz, Kwawkwawapelt, Squiahla, Skwah, Skulkayu, Skway, Tsoowahlie, Tzeachten, and Yukkwekwioose.

Vital Statistics.—The nine bands named have a combined population of three hundred and thirteen, a decrease of two since last census. During the year there were eight births and ten deaths.

Industrial School, Kuper Island, B.C.

Health and Sanitation.—The health of these Indians, on the whole, has been good. Their villages are kept clean and in a sanitary condition, and to this fact is due their escape from serious illness. In the month of January last small-pox broke out on Tsoowahlie reserve, resulting in one death; four cases altogether having occurred. A strict quarantine was maintained, which prevented the disease from spreading, and we were fortunate enough to be able to confine the disease to the two first houses where it had been discovered. Nearly all of these Indians have been vaccinated.

Occupations.—The Indians of these reserves engage chiefly in agriculture and fishing pursuits, a little is also earned by them working for their white neighbours and at hop-picking.

Buildings, Stock and Farming Implements.—Their buildings are nearly all frame, and are kept clean and in good repair.

Their stock is of the variety usually found on the farms of their white neighbours, a continued improvement from year to year being noticeable.

Most families have their own farming implements.

Education.—A lively interest is taken by these Indians in educational matters, the Roman Catholic Indians sending their children to the school at St. Mary's mission, and those of the Methodist religion to the Coqualeetza institute.

Religion.—These Indians follow respectively the Roman Catholic, the Church of England and the Methodist persuasions, and are attentive to the religious instruction given by their clergy.

Characteristics and Progress.—These Indians are on the whole fairly industrious and law-abiding.

Temperance and Morality.—They are as a general rule moral, but unfortunately many of them are fond of liquor.

Bands on Burrard Inlet, Howe Sound and Squamish River.

These bands known as the Squamish Indians and occupying reserves containing a total area of six thousand seven hundred and eighty-six acres, are as follows:—Burrard Inlet No. 3, False Creek, Mission Burrard Inlet, Kapilano, Skawamish, Howe Sound and Seymour Creek.

Vital Statistics.—The combined population of these six bands is three hundred and sixty-eight, a decrease of six during the year. There were eleven births and seventeen deaths.

Health and Sanitation.—The health of these Indians has been good. Their villages are kept clean and in a sanitary condition, and nearly all of the Indians have been vaccinated from time to time.

Occupations.—The chief occupations of these Indians are fishing, hunting, logging and loading lumber in vessels at the saw-mills. A little gardening and farming is also done by them.

Buildings, Stock and Farming Implements.—The Indians residing on these reserves have fairly good dwelling-houses, and outhouses. Their cattle and horses are well cared for and are of good breed. Their implements also are well taken care of.

Education.—A boarding school was opened adjoining the mission reserve about three years ago by the Roman Catholic bishop with four sisters in charge as teachers, also a chaplain. This school fills a long felt want and is much appreciated by the Squamish Indians.

Religion.—These Indians are all either Roman Catholics or pagans. Those of them professing the Roman Catholic religion are regular attendants at church and take great interest in religious matters.

Characteristics and Progress.—These Indians are industrious and law abiding and are obedient to the advice of their elders.

Temperance and Morality.—These Indians are on the whole temperate and moral; a few only are fond of liquor.

Cheam Band.

Reserve.—The reserve of this band is situated on the south bank of the Fraser river and about eighty miles from its mouth. It contains an area of fourteen hundred and thirty-three acres.

Vital Statistics.—The population of this band is one hundred, a decrease of one since last census. There were three births and four deaths.

Health and Sanitation.—The health of these Indians has been good, no sickness of a serious or contagious nature having made its appearance among them. Their village is kept clean and in a sanitary condition, and nearly all of the Indians have been vaccinated from time to time.

Occupations.—The Indians of this band engage chiefly in agricultural and fishing pursuits, a little is also earned by them at hop-picking and working for their white neighbours.

Buildings, Stock and Farming Implements.—These Indians all have fairly good dwellings with good barns and stables. Their stock are well taken care of, as also are their farming implements.

Education.—A lively interest is taken in education. Most of the children of school age attend the Indian school at St. Mary's mission.

Religion.—These Indians are all Roman Catholics with the exception of one, who is a Methodist. They have a nice church in their village, which they attend regularly.

Characteristics and Progress.—These Indians are an industrious, law-abiding, good people.

Temperance and Morality.—They are a temperate, moral people, a few only being fond of liquor.

Chehalis and Scowlitz Bands.

Reserves.—The Chehalis and Scowlitz Indians occupy reserves on Harrison river, Scowlitz reserve being at its mouth, and Chehalis reserve about four miles up stream, forming a combined area of three thousand one hundred and forty acres.

Vital Statistics.—The population of these two bands, is one hundred and sixty-three. There were five births and five deaths during the year; no other change in the population.

Health and Sanitation.—The health of these Indians on the whole has been good; their villages are kept clean and in a sanitary condition and nearly all of them have been vaccinated from time to time.

Occupations.—Farming, dairying, fishing and hunting are the chief occupations of these Indians. As in previous years, James of Scowlitz and Chief Johnny Leon of Chehalis easily take the lead of all the others in dairying and others branches of farming.

Buildings, Stock and Farming Implements.—Most of these Indians have comfortable frame dwellings, they have fairly good barns and stables and take good care of their stock, putting up plenty of hay for them during the winter. They have good farming implements and take good care of them

Education.—Most of the children of school age of these bands attend the Indian school at St. Mary's mission.

Religion.—These Indians are Roman Catholics with the exception of five who belong to the English Church. They are attentive to the religious instruction given by their pastors.

Characteristics and Progress.—These Indians are making steady progress and are good law-abiding people.

Temperance and Morality.—They are a temperate and moral people, a few only being fond of liquor.

Coquitlam Band.

Reserve.—The reserve of this band is situated on the Coquitlam river, and about six miles from New Westminster. It contains an area of two hundred and eight acres.

Vital Statistics.—The population is twenty-five. There were no births and but one death during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians has been fairly good, their village is kept clean and in a sanitary condition. All these Indians have been vaccinated from time to time.

Occupations.—These Indians engage chiefly in fishing and hunting. Being near to New Westminster, they furnish the local market with most of the fresh fish and game required.

Buildings, Stock and Farming Implements.—Most of these Indians have fairly good dwellings. They do not keep much stock, preferring to make a living by fishing and hunting.

Religion.—These Indians are Roman Catholics. They have a nice church on their reserve, where they attend divine service regularly.

Characteristics and Progress.—These Indians are industrious and law-abiding.

Temperance and Morality.—They are on the whole temperate and moral, a few only being fond of liquor.

Douglas, Skookum Chuck, Samahquam and Pemberton Meadows Bands.

Reserves.—These bands occupy reserves situated between the head of Harrison lake, along the Lillooet portage to Pemberton, containing a combined area of three thousand four hundred and eighty-five acres.

Vital Statistics.—The population of these bands is five hundred and nine, being an increase of five since last census. There were twenty-five births and twenty deaths during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians on the whole has been good. Their villages are kept clean and in a sanitary condition and most of the Indians have been vaccinated from time to time.

Occupations.—Fishing, hunting, packing, acting as guides to prospectors, and agricultural pursuits, are the chief occupations of these Indians.

Buildings, Stock and Farming Implements.—These Indians have fairly good dwellings, barns and stables, which they keep in good repair. The barns and stables are mostly log buildings. Their horses are mostly Indian ponies. Their cattle, on the other hand, are excellent animals and are well taken care of. Farming implements are also well taken care of.

Religion.—These Indians are all Roman Catholics. They have three churches, one at Douglas, one at Skookum Chuck, and one at Pemberton Meadows.

Characteristics and Progress.—These Indians are an industrious, law-abiding, simple good people; Chief James of Pemberton Meadows is to a great extent deserving of the credit for the progress which these Indians are making. His influence among them is great and is always exercised for their good.

Temperance and Morality.—These Indians are temperate and moral and strictly honest. Only a few of them are addicted to the use of liquor.

Ewawoos and Texas Lake Bands.

Reserves.—The reserves of these bands are situated, the former on the south bank of the Fraser River about two miles east of Hope, and the latter on the north bank of the Fraser River about seven miles east of Hope. They contain a combined area of eight hundred and ninety-three acres.

Vital Statistics.—The population of these two bands is sixty-two. There was one birth, one death and three women left the band through marriage with Indians of other bands.

Health and Sanitation.—The health of these Indians has been good, their villages are kept clean and in a sanitary condition and most of the Indians have been vaccinated from time to time.

Occupations.—The principal occupations of these Indians are fishing, hunting and agriculture, a little mixed farming being done by each family.

Buildings, Stock and Farming Implements.—Nearly all of these Indians have comfortable dwellings, and outhouses, which they keep in good order. Their farming implements are well cared for and suitable for their requirements. Their stock are also well taken care of.

Education.—A lively interest in education is taken by these Indians. Most of their children of school age are attending school at St. Mary's mission.

Religion.—These Indians are mostly Roman Catholics. A few are members of the Church of England. They are a simple-minded good people. There is a church at each village where services are held frequently.

Characteristics and Progress.—These Indians are an industrious good people, are obliging and kind to their white neighbours.

Temperance and Morality.—They are a temperate, moral, good people.

Hope Band.

Reserve.—These Indians occupy a reserve about one hundred miles from the mouth of the Fraser River, on the north bank of the said river, containing an area of fourteen hundred acres.

Vital Statistics.—This band has a population of eighty-seven. There were two births and two deaths: no other changes in the population during the year.

Health and Sanitation.—The health of these Indians has been good. Most of them have been vaccinated from time to time.

Occupations.—These Indians engage chiefly in agriculture and fishing, each family doing more or less mixed farming and fruit-culture, also poultry-raising.

Buildings, Stock and Farming Implements.—These Indians all have comfortable dwellings and fairly good barns and stables. They take good care of their cattle and horses, putting up a good supply of fodder for them during the winter. They have a good supply of farming implements, including a threshing-machine, of which they take good care.

Education.—The greater number of these Indians have been educated at St. Mary's mission and all of them are anxious to have their children educated.

Religion.—Most of these Indians are Roman Catholics. They have a nice church on their reserve where they attend divine service regularly.

Characteristics and Progress.—These Indians are industrious and law-abiding; they live better and more like their white neighbours than any other band in the district. The chief of the band, Pierre Ayessik, is a man of more than average intelligence, and to him is due the credit in a great measure for the advanced state of the Hope Indians.

Temperance and Morality.—They are a temperate, moral, good people.

Homalko and Klahoose Bands.

Reserves.—The reserves of these bands are situated in the vicinity of Bute inlet and Malaspina straits; they contain a combined area of four thousand seven hundred and eighty-three acres.

Vital Statistics.—These bands have a population of one hundred and fifty-eight. There were five births and four deaths during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians has been good, their villages are kept clean and in a sanitary condition, and most of the Indians have been vaccinated from time to time.

Occupations.—Fishing, hunting, logging and farming constitute the occupations of these Indians, only a small amount of farming being done.

Buildings, Stock and Farming Implements.—The buildings occupied by these Indians are mostly good frame dwellings, although some of them still continue to occupy their old-time houses. Their stock run at large during the whole year, and as there is little frost or snow in the district, thrive very well. They keep no horses, and the only farming or cultivation done is done with spades, shovels, &c.

Religion.—These Indians are all Roman Catholics. They had a nice church at Squirrel cove and one at the mouth of Bute inlet where they attend divine service regularly.

Characteristics and Progress.—These Indians are a simple-minded good people and invariably provide for their requirements, very seldom asking for any assistance from the department.

Temperance and Morality.—They are a temperate, moral, good people. There is not a half-breed in either band.

Katsey Band.

Reserve.—The reserve of this band is situated on the north and south banks of the Fraser river about ten miles from New Westminster, and contains three hundred and eighty-five acres.

Vital Statistics.—The population of this band is seventy-eight. There was one birth and one death during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians has beenfairly good; their village is kept clean and in a sanitary condition and all of the Indians have been vaccinated from time to time.

Occupations.—The chief occupations of these Indians are fishing, hunting, and farming, each family doing a little mixed farming.

Buildings, Stock and Farming Implements.—These Indians have fairly good dwellings, barns and stables, their stock are well cared for, as also are their farming implements.

Education.—A number of these Indians send their children to St. Mary's Mission Indian school, the parents in most cases being anxious to have their children educated.

Religion.—These Indians are all Roman Catholics. They have a small church on their reserve, where divine service is held from time to time.

Characteristics and Progress.—These Indians are industrious and law-abiding and are continuing to improve.

Temperance and Morality.—These Indians are a moral good people, and I am happy to say, very few of them now are addicted to the use of liquor.

Langley and Wharnock Bands.

Reserves.—The reserves of these bands are situated, the former on MacMillan island in the Fraser river about twenty miles east of New Westminster, and the latter on the north bank of the Fraser river about twenty-four miles east of New Westminster. They contain a combined area of one thousand four hundred and fifty-two acres.

Vital Statistics.—The population of these two bands is sixty-two. There were two deaths during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians has been fairly good, their villages are kept clean and in a sanitary condition, and all of the Indians have been vaccinated from time to time.

Occupations.—All of these Indians do more or less mixed farming, and during the fishing season fish for the canneries.

Buildings, Stock and Farming Implements.—These Indians all have comfortable dwelling-houses, good barns, and stables, which are kept clean and in good repair. Their horses and cattle are of good variety and are well fed and cared for during the winter, as also are their farming implements.

Education.—Many of these Indians have been educated at St. Mary's Mission Indian school, and all of them take an active interest in educational matters.

Religion.—They are all Roman Catholics and attend to their religious duties faithfully. They have a small church on each reserve, where divine service is held from time to time.

Characteristics and Progress.—They are industrious and law-abiding.

Temperance and Morality.—These Indians are a temperate, moral people, they are not given to the use of liquor.

Musqueam Band.

Reserve.—The reserve of this band is situated on the north arm of the Fraser river and about one mile from its mouth. It contains an area of four hundred and fifty-two acres.

Vital Statistics.—This band has a population of ninety-eight, an increase of two since last census. There were three births and one death during the year.

Health and Sanitation.—The health of these Indians has been good, their village kept clean and in a sanitary condition, and most of the Indians have been vaccinated from time to time.

Occupations.—These Indians all do more or less mixed farming and during the fishing season, fish for the canneries.

Buildings, Stock and Farming Implements.—They have all comfortable dwellings with fairly good barns and stables. Their horses and cattle are well taken care of, as also are their farming implements.

Education.—Some of these Indians send their children to Coqualeetza institute, some to St. Mary's Mission and some again to Kuper Island school.

Religion.—Eighty-five are Roman Catholics, ten are Methodists and three are pagans.

Characteristics and Progress.—These Indians are industrious and law-abiding and are improving from year to year.

Temperance and Morality.—These Indians are on the whole temperate and moral, a few only being fond of liquor.

Matsqui Band.

Reserve.—The reserve of this band is situated on the south bank of the Fraser river about thirty miles from New Westminster, and contains an area of one thousand and seventy-two acres.

Vital Statistics.—This band has a population of forty-six. There were four births and no deaths during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians has been good, their village is kept clean and in a sanitary condition and nearly all of the Indians have been vaccinated from time to time.

Occupations.—All of these Indians do more or less mixed farming and during the fishing season fish for the canneries.

Buildings, Stock and Farming Implements.—Most of these Indians have comfortable dwellings with fairly good barns and stables. Their horses and cattle are well taken care of, as also are their farming implements.

Education.—These Indians take an active interest in educational matters, most of the younger members of the band having attended the mission school.

Religion.—They are all Roman Catholics and attend church every Sunday at St. Mary's mission.

Temperance and Morality.—They are a temperate, moral people, very few of them being addicted to the use of liquor.

New Westminster Band.

Reserves.—These Indians have reserves in New Westminster and at Brownsville, comprising an area of thirty-two acres.

Vital Statistics.—These Indians have a population of sixty-five. There were no changes in the population during the year.

Health and Sanitation.—The health of these Indians has been good; their dwellings are kept clean and in a sanitary condition, and all of them have been vaccinated from time to time.

Occupations.—They make a living chiefly by fishing and hunting. They supply the local market with most of the fresh fish and game required.

Buildings, Stock and Farming Implements.—These Indians have comfortable dwellings. A few of them own their own residences in the city, on which they pay taxes. Very little farming is done by them—just a few garden patches. They have only a few head of stock.

Education.—These Indians are quite anxious to give their children a good education.

Religion.—They are all Roman Catholics. They have a nice church on their reserve at Brownsville, where divine service is held regularly.

Temperance and Morality.—These Indians are a temperate, moral people, a few only being fond of liquor.

Nicomen and Skweahm Bands.

Reserves.—These Indians occupy two reserves on the north bank of the Fraser river, about forty-four miles from New Westminster, comprising an area of six hundred and thirty-six acres.

Vital Statistics.—The population of these two bands is forty-six. There were no births nor deaths during the year.

Health and Sanitation.—The health of these Indians has been good, their villages are kept clean and in a sanitary condition, and nearly all of the Indians have been vaccinated from time to time.

Occupations.—Farming and fishing are the chief occupations of these Indians. Nearly all of them do more or less mixed farming, and during the fishing season fish for the canneries.

Buildings, Stock and Farming Implements.—These Indians have fairly good dwellings, barns and stables. Their stock are well cared for, as also are their farming implements.

Education.—These Indians do not trouble much about education, and very few of them can either read or write.

Religion —They are all Roman Catholics, but do not take much interest in religious matters.

Characteristics and Progress.—These Indians are a simple-minded people, follow their old customs a good deal, but are improving a little.

Temperance and Morality.—These Indians are on the whole moral, but many of them are addicted to the use of liquor.

Semiahmoo Band.

Reserve.—The reserve of this band borders on the international boundary line and fronts on Semiahmoo bay. It contains an area of three hundred and ninety-two acres.

Vital Statistics.—The population of this band is thirty. There were two deaths during the year: no other changes in the population.

Health and Sanitation.—The health of these Indians during the year has been good. Their village is kept clean and in a sanitary condition, and most of the Indians have been vaccinated from time to time.

Buildings, Stock and Farming Implements.—Nearly all of these Indians have comfortable dwellings, with good barns and stables, which are kept in good repair. Their cattle and horses are well cared for and are of good quality. Their implements also are well cared for.

Education.—Only a few of these Indians can either read or write, and they do not seem to take much interest in educational matters.

Religion.—They are all Roman Catholics. They have a small church on their reserve where divine service is held regularly.

Characteristics and Progress.—They are an easy-going simple people and easy to get along with.

Temperance and Morality.—They are on the whole temperate and moral: but owing to their close proximity to the American boundary line, they can easily procure liquor, but on the whole there is little reason to find fault with them.

Ohamil Band.

Reserve.—The reserve of this band is situated on the south bank of the Fraser river about seventy-four miles east of New Westminster, and contains an area of six hundred and twenty-nine acres.

Vital Statistics.—This band has a population of fifty-seven. There was one birth and one death during the year, no other changes in the population.

Health and Sanitation.—The health of these Indians has been good. Their village is kept clean and in a sanitary condition, and most of the Indians have been vaccinated from time to time.

Occupations.—Farming and fishing are the chief occupations of these Indians, nearly all of them do more or less mixed farming.

Buildings, Stock and Farming Implements.—These Indians all have fairly good dwellings, barns, and stables, which they keep in good repair. Their cattle and horses are well taken care of and are of good quality.

Education.—These Indians take an active interest in education. Most of the children of school age attend the Indian school at St. Mary's mission.

Religion.—These Indians are very earnest about religious matters. They have two small churches on their reserve, one belonging to Indians who are members of the Church of England, and the other belonging to the Roman Catholic Indians.

Characteristics and Progress.—They are an industrious, law-abiding people and are easy to get along with.

Temperance and Morality.—They are a temperate, moral people.

Popcum and Squawtits Bands.

Reserves.—The reserves of these bands are situated on the south bank of the Fraser river about sixty-five miles east of New Westminster, and contain a combined area of five thousand three hundred and twenty-six acres.

Vital Statistics.—The population of these two bands is fifty-six, there was one birth and one death during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians has been good, their villages are kept clean and in a sanitary condition, and most of these Indians have been vaccinated from time to time.

Occupations.—Fishing and farming are the chief occupations of these Indians, each family doing less or more mixed farming.

Buildings, Stock and Farming Implements.—Most of these Indians have fairly good dwellings and outhouses, which they keep in good repair. Their horses and cattle are well cared for, as are also their farming implements.

Education.—These Indians take a lively interest in educational matters, most of the parents being anxious to send their children to school. A few, however, take no interest in education.

Religion.—Twenty-six of these Indians belong to the English Church, ten to the Methodist Church and twenty to the Roman Catholic Church. The members of each denomination have their own church and are attentive to their religious duties.

Characteristics and Progress.—They are a simple-minded, easy-going people and easy to please.

Temperance and Morality.—They are a temperate, moral people, a few only being fond of liquor.

Sechelt Band.

Reserve.—The reserve of this band is situated on Sechelt peninsula, Malaspina straits, and contains an area of eight hundred acres.

Vital Statistics.—The population of this band is two hundred and thirty-six, an increase of two during the year. There were eight births, and six deaths; no other changes in the population.

Health and Sanitation.—The health of these Indians has been good. Their village is kept clean and in a sanitary condition, and most of the Indians have been vaccinated from time to time.

Occupations.—Fishing, hunting and hand logging, constitute the chief occupations of these Indians. A little gardening is done by each family.

Buildings, Stock and Farming Implements.—These Indians all have comfortable dwellings, which are kept in good repair. Their stock run at large summer and winter and on the whole do fairly well.

Religion.—They are all Roman Catholics. They have a beautiful church at their village, where divine service is held regularly.

Characteristics and Progress.—They are a simple, kind people, are easy to get along with and are strictly honest.

Temperance and Morality.—They are a temperate, moral people; drunkenness is practically unknown among them.

Sumass Band.

Reserves.—The reserves of this band are situated at Millers Landing, on the south bank of the Fraser river: at Sumass Bar, on the north bank of the Fraser river, and at Upper Sumass on Sumass lake, and contain an area of thirteen hundred and seventy acres.

Vital Statistics.—This band has a population of fifty. There were no births and no deaths during the year, and no change in the population.

Health and Sanitation.—The health of these Indians has been good. Their villages are kept clean and in a sanitary condition, and all the Indians have been vaccinated from time to time.

Occupations.—Mixed farming, fishing and hunting are the chief occupations of these Indians.

Buildings, Stock and Farming Implements.—They have all fairly good dwellings, barns and stables. Their stock are of good grade and are well taken care of, as also are their farming implements.

Education.—Only a few of these Indians have ever attended any school, and they do not take much interest in education.

Religion.—Twenty-eight of these Indians are Methodists and twenty-two are Roman Catholics. They are very enthusiastic in religious matters.

Temperance and Morality.—They are on the whole temperate and moral.

Sliammon Band.

Reserve.—The reserve of this band is situated on Malaspina straits, and contains an area of four thousand seven hundred and twelve acres.

Vital Statistics.—This band has a population of one hundred and two. There were two births and two deaths during the year; no other changes in the population.

Health and Sanitation.—The health of these Indians has been good. Their village is kept clean and in a sanitary condition, and most of the Indians have been vaccinated from time to time.

Occupations.—The chief occupations of these Indians are fishing, hunting and hand logging, only a little gardening being done by each family.

Buildings, Stock and Farming Implements.—These Indians are improving their dwellings from year to year. Their stock run at large the year round and do fairly well.

Religion.—They are all Roman Catholics and are attentive to their religious duties.

Characteristics and Progress.—These Indians are an easy-going people, are easily managed and scrupulously honest.

Temperance and Morality.—They are a temperate, moral people, are not addicted to the use of liquor, and to their credit there is not a half-breed in the band.

Skawahlook Band.

Reserve.—The reserve of this band is situated on the north bank of the Fraser river between Ruby creek and Hope. It contains an area of one hundred and ninety six acres.

Vital Statistics.—This band has a population of twenty-three. There were no births and no deaths during the year and no change in the population.

Health and Sanitation.—The health of these Indians has been good. Their village is kept clean and in a sanitary condition, and most of the Indians have been vaccinated from time to time.

Occupations.—Mixed farming, fishing and hunting are the chief occupations of these Indians.

Buildings, Stock and Farming Implements.—These Indians have fairly good dwellings, barns and stables. They take good care of their stock during the winter and also of their farming implements.

Religion.—They are all Roman Catholics. They have a small church on their reserve, where divine service is held regularly.

Characteristics and Progress.—They are a simple-minded people, obedient to authority and live on the best of terms with their white neighbours.

Temperance and Morality.—They are a temperate, moral people.

Tchewassan Band.

Reserve.—The reserve of this band is situated on the gulf of Georgia, near Point Roberts, and contains an area of six hundred and four acres.

Vital Statistics.—This band has a popu'ation of forty-five. There was one birth and one death during the year. No other change in the population.

Health and Sanitation.—The health of these Indians has been good. Their village is kept clean and in a sanitary condition and all the Indians have been vaccinated from time to time.

Occupations.—Farming, fishing, and hunting, are the chief occupations of these Indians.

Buildings, Stock, and Farming Implements.—These Indians have fairly good dwellings, barns, and stables. They have a good grade of horses and cattle, also good farming implements ; which are well taken care of.

Education.—Only a few of these Indians can read or write, owing to the fact that the school at St. Mary's mission is constantly full. A few have sent their children to Kuper Island school.

Religion.—These Indians are all Roman Catholics, but are not very religiously inclined.

Characteristics and Progress.—They are on the whole a simple good people ; having enough for their immediate wants, they have little thought for to-morrow.

Temperance and Morality.—These Indians are moral ; but I am sorry to say many of them are fond of liquor.

Yale Band.

Reserve.—The reserve of this band is situated on the Fraser river about one hundred and twelve miles from its mouth.

Vital Statistics.—The population of this band is eighty-five. There were four births and two deaths during the year ; no other changes in the population.

Health and Sanitation.—The health of these Indians has been fairly good ; their villages are kept clean and in a sanitary condition, and all the Indians have been vaccinated from time to time.

Occupations.—Farming, fishing and hunting are the chief occupations of these Indians. A few work as section-hands on the Canadian Pacific railway.

Buildings, Stock, and Farming Implements —These Indians have fairly good dwellings, barns, and stables. Their stock are well cared for, as also are their farming implements.

Education.—These Indians take a good deal of interest in the education of their children, and are anxious to see them on a par in this respect with their white neighbours.

Religion.—Sixty-four of these Indians are Roman Catholics and twenty-one are members of the Church of England. They are attentive to their religious duties ; each

denomination having its own church in the village, where divine service is held from time to time.

Characteristics and Progress.—These Indians are a simple-minded good people, are easy to get along with and live in harmony with their white neighbours.

Temperance and Morality.—They are a temperate, moral people, a few only being fond of liquor.

General Remarks.

The Indians throughout this agency are making steady progress. Those of them who have been educated, and who have taken up house on their own account, show a marked improvement in their homes as compared with those of their less fortunate neighbours, who have never attended school. To the principals and their staff of assistants who have charge of the four schools in this agency, viz.: All Hallows, Coqualeetza Institute, St. Mary's Mission, and Squamish Mission, too much praise cannot be given for the care and attention given the children under their charge. A mild type of small-pox reached Tsoo-wah-lie reserve, Chilliwack, in the month of January last, brought hither by two Indians who were visiting some of their relatives in Mootsack in the State of Washington. Five cases occurred altogether, resulting in one death. About the end of June inst., a fresh case of small-pox occurred among Squamish Indians, ten having contracted the disease, but I am glad to say all have recovered. Great praise is due to Dr. Henderson, of Chilliwack, to Drs. Brydone, Jack, Monroe and McAlpine, of Vancouver, and to Dr. Fagan, of the Provincial Board of Health, for their active help in checking and stamping out the contagion. I have to thank His Worship Mayor Neelands and members of the Health Committee of the Corporation of the city of Vancouver, who kindly placed at my disposal their city small-pox hospital with all its equipment, for use of the Squamish Indians who might contract the disease. This action on their part made it possible for the doctors attending the Indians to prevent it spreading, which owing to the large number of Indians in the district at this season of the year otherwise would have been difficult.

I have, &c.,

FRANK DEVLIN,
Indian Agent.

British Columbia,
Kamloops-Okanagan Agency,
Kamloops, August 19, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report on the affairs of this agency for the fiscal year ended June 30, 1902.

Location.—The Kamloops-Okanagan agency is located in, and scattered over, the greater portion of Yale district, immediately north of the international boundary line; the district contains approximately twenty-four thousand square miles. The agency contains an aggregate acreage of three hundred and thirty-three thousand five hundred and eleven acres.

Tribe or Nation.—The Indians belong to the Shuswap, Thompson River and Okanagan tribes, and speak the dialects known as Shuswap, Thompson and Okanagan. Most of the younger ones can understand and speak English fairly.

Natural Subdivisions.—The agency is divided naturally by the rivers which drain it, into the Fraser, Thompson, Nicola, Similkameen and Okanagan districts.

Adam's Lake or Haltkam Band.

Reserves.—The reserves of this band number five and are situated near the foot of Little Shuswap lake and at Adam's lake. They contain an area of seven thousand one hundred and eighty-eight acres, comprising agricultural, grazing and timber lands.

Vital Statistics.—The population is one hundred and eighty-seven. There have been twelve births and six deaths during the year.

Health and Sanitation.—The health of these Indians has been remarkably good. No epidemic has appeared among them, and they have required very little medical attendance or medicine. Most of them have been vaccinated from time to time, and they keep their houses and persons fairly clean.

Resources and Occupations.—These Indians, since procuring water for irrigation purposes, have devoted themselves largely to farming, for which purpose quite a portion of their land is well adapted. They raise quite a number of horses and some cattle. They fish, hunt and work as labourers in various capacities.

Buildings.—Their houses and other buildings are mostly of logs and they are not of a very good quality.

Stock.—These Indians have good horses for farm and saddle purposes, some cattle and other domestic stock.

Farm Implements.—They have farm implements in good number of nearly every description required—ploughs, harrows, rollers, wagons, mowers and reapers, horse-rakes and a small threshing-machine.

Education.—There are no schools among them. Some children have attended the industrial school at Kamloops, and some have been taught to read and write shorthand Chinook.

Religion.—They all belong to the Roman Catholic Church, have one church building and manifest great interest in religious matters.

Characteristics and Progress.—These Indians are industrious, and they have made very marked progress in farming in recent years. They are law-abiding, peaceable people.

Temperance and Morality.—These Indians are temperate and moral.

Ashcroft or Stlahl Band.

Reserves.—The reserves of this band, three in number, are located on a plateau on the right bank of the Thompson river opposite to the town of Ashcroft, and at McLean's lake. They contain an aggregate area of five thousand two hundred and forty-three acres, combining agricultural, grazing and timber lands.

Vital Statistics.—The population is fifty. Formerly the Pasca band, numbering ten, was included in the population. They have now been enumerated with Oregon Jack Creek. There have been two deaths and two births during the year.

Health and Sanitation.—The general health of these Indians has been good. No epidemic has appeared among them. Sanitary precautions are pretty well observed. Indians have been vaccinated. Dwelling-houses are not much occupied during summer season, and drinking water is pure.

Resources and Occupations.—These Indians carry on a system of mixed farming and stock-raising. The supply of water is too limited for extensive farming. They

also fish and hunt, are employed as freighters and packers, and as labourers on farms and as cowboys.

Buildings.—They have log buildings, mostly of the early class of such. A few fairly good dwellings have been more recently constructed.

Stock.—They have some good horses for teaming and farm work, and others suitable for pack and riding animals; also some cattle.

Farm Implements.—They are fairly well supplied with farm implements for their limited requirements.

Education.—There is no system of education among them.

Religion.—They all belong to the Anglican Church; have one substantial log church, and evince a lively interest in church matters.

Characteristics and Progress.—These Indians are fairly industrious, but, working as they do, largely for wages, they do not accumulate much. They have done considerable fencing and other improvements during the year.

Temperance and Morality.—These Indians are fairly temperate and moral.

Bonaparte or Tluhtaus Band.

Reserves.—The reserves of this band, five in number, are located on the Thompson and Bonaparte rivers; on Hat creek, and at Loon lake. They contain six thousand one hundred and thirteen and eight-tenths acres. Some of it is farming land: the remainder grazing and timber lands.

Vital Statistics.—The population is one hundred and fifty-nine. There have been six deaths and six births during the year.

Health and Sanitation.—The general health has been good. No epidemic has visited them. Most of them have been vaccinated; their houses are not as clean or as well kept as most Indian houses.

Resources and Occupations.—They raise some farm produce, chiefly on Hat creek, have quite a herd of horses and some cattle; but they depend more for a living on fishing and hunting and by working as common labourers.

Buildings.—They have a poor class of log building. The chief has recently built a fairly good log house, and they have an imposing church edifice.

Stock.—They have a number of horses, mostly suitable for riding purposes, and some cattle.

Farming Implements.—They have farm implements suited to their present needs.

Education.—They have no means of education other than that afforded at the Kamloops industrial school.

Religion.—They all belong to the Roman Catholic Church, and, during the visits of the priest among them, they are devout adherents. The impression is not as lasting as could be hoped for.

Characteristics and Progress.—A number of these Indians are good workers for a time, but they are very nomadic in their habits. They have made comparatively little progress in the acquisition of wealth.

Temperance and Morality.—Too many of them are addicted to the use of intoxicants.

Boothroyd (Suuk, Kamoos and Nkatsam Chomok) Band.

Reserves.—The reserves of this band, ten in number, are located chiefly on the left bank of the Fraser river. They contain an area of one thousand six hundred and one-half acres. Small portions of this land, where cleared, produce well. Most of the land is timbered and rocky.

Vital Statistics.—The population is one hundred and fifty-nine. There have been five births and seven deaths during the year.

Health and Sanitation.—There has been no epidemic among these Indians; they have been vaccinated, and their houses are fairly clean and well kept.

Resources and Occupations.—These Indians raise a little hay, and considerable quantities of vegetables and fruit on their small farms. They procure a great quantity of fish and do considerable hunting and trapping; they also mine quite extensively, and work as labourers on the railway and otherwise.

Buildings.—They have a fairly good class of houses, which they keep improving upon.

Stock.—They have some smaller class horses, which they use chiefly for riding and packing, and more cattle than are usually found among Indians on this section of the Fraser river.

Farm Implements.—With such they are fairly supplied according to their needs.

Education.—They have no means of education.

Religion.—All but three of these Indians belong to the Anglican Church; three are Roman Catholics. They have one small church-building and are good-living people.

Characteristics and Progress.—These Indians are very industrious and good workers: no better workers can be found than some of these. Those living at Nkatsam are rather well-to do, and always appear to have money.

Temperance and Morality.—They are exceptionally temperate and moral people.

Boston Bar Band.

Reserves.—The reserves of this band number seven, located around Boston Bar, North Bend and Scuney. They contain six hundred and twenty-eight acres. They consist of small patches of tillable land, the rest being rocks and timber.

Vital Statistics.—The population is one hundred and fifty-nine. There have been seven deaths and six births during the year.

Health and Sanitation.—No epidemic has visited these Indians, and there has not been much sickness among them. They have been vaccinated, and especially those living near North Bend, keep their premises and houses well.

Resources and Occupations.—These Indians grow a little hay, fruit and considerable quantities of vegetables. They depend more, however, on mining, fishing and hunting, working on the railroad, and basket-making among the women.

Buildings.—About North Bend the Indians have rather a good class of buildings; other places not so good, although considerable improvement in this respect is noticeable at Boston Bar.

Stock.—They have a number of saddle and pack horses, and a very few cattle. The bulk of their stock they winter in the Nicola.

Farm Implements.—They have sufficient for their needs.

Education.—Some have been educated at the industrial school at Kamloops.

Religion.—They are about evenly divided among the Roman Catholics and the Anglicans. The latter have a good church at North Bend, and all evince considerable interest in religious matters.

Characteristics and Progress.—They are steady, good working Indians, but are unable to make much progress. Chief George, of North Bend, appears to be in advance of most of them.

Temperance and Morality.—In these respects they compare well with other bands.

Cook's Ferry Band.

Reserves.—The reserves of this band, numbering fifteen, are located on both banks of the Thompson river around Cook's Ferry and Spatsum, and in Tuile and Highland

valleys. They consist of bench-lands along the river, containing farming and grazing lands, with sparsely timbered land higher up, and some meadow-land in the valleys. The aggregate acreage totals nine thousand one hundred and ten and ninety-two one hundredths acres.

Vital Statistics.—The population is two hundred and four. There have been eight births and ten deaths during the year. The Nepa band numbering ten, formerly included in Spatsum band, has been enumerated with Oregon Jack Creek band.

Health and Sanitation.—No epidemic has visited this band, and the general health has been fair, several of the deaths occurring being those of old people. The Indians have been vaccinated, and sanitary conditions are good.

Resources and Occupations.—These Indians carry on mixed farming and stock-raising, fish and hunt a little, and work as labouring hands on farms and on the railway, and as cowboys. In the immediate vicinity of Cook's Ferry the soil is too dry for successful crop raising. Further up the river on Pemynoos reserve conditions are better, and considerable produce is grown.

Buildings.—Their buildings are mostly of logs and cannot be classed as good. They are fairly comfortable.

Stock.—They possess a number of fairly good horses, and a few of the Indians have nice herds of cattle and some pigs.

Farming Implements.—They are well supplied with farm implements.

Education.—There is no system of education among them.

Religion.—They all belong to the Anglican Church. They have two church buildings—one at Cook's Ferry and one at Pemynoos—and they take an active interest in church matters.

Characteristics and Progress.—These Indians are industrious. Around Cook's Ferry they do not make much progress. Higher up the river some of them are well-to-do. Kyume and Johnny Pasco are in advance of others in farming and stock. All the Indians are law-abiding.

Temperance and Morality.—These Indians are fairly temperate and moral.

Deadman's Creek or Stichistan Band.

Reserve.—The reserve of this band is situated on Deadman's creek. It contains an area of twenty thousand one hundred and thirty-four acres, composed of farming, fine grazing and timber lands.

Vital Statistics.—The population is one hundred and thirteen. There have been four deaths and five births during the year.

Health and Sanitation.—The general health has been good, no contagious diseases among them. The Indians have been vaccinated. Their houses are mostly too small and being for the greater part mud-roofed, do not admit of good ventilation. They are, however, not much occupied in summer.

Resources and Occupations.—These Indians farm a little, raise some stock, chiefly horses, fish and hunt, and work as day labourers. The chief occupation of the younger men is that of cowboys.

Buildings.—Their buildings are of logs, and all the older ones are mud-roofed; many of them might be classed as huts. Recently a few substantial, shingled houses have been built.

Stock.—They have a fair number of horses, a few being suitable for farm and team, but the majority are good saddle horses. They have also some cattle.

Farm Implements.—They have sufficient farm implements.

Education.—They have no schools. Several children have attended the Kamloops industrial school.

Religion.—They all belong to the Roman Catholic Church; they have one fairly good church-building, and attend service regularly.

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Brass Band of Kuper Island Industrial School, B.C.

Characteristics and Progress.—These Indians have not been industrious, except in the direction of cowboys (all their ambitions appear to have been directed in that way). Latterly, more noticeably in the last year, they have devoted much more attention towards improving and cultivating their land.

Temperance and Morality.—These Indians have held the reputation of being one of the most intemperate bands in the agency. In this respect there has been a very decided improvement for the better.

Kamloops.

Reserves.—The reserves of this band, numbering five, are situated mainly at the confluence of the North and South Thompson rivers, immediately opposite to the city of Kamloops. They contain an area of thirty-three thousand three hundred and seventy-nine acres, comprising good agricultural, grazing, meadow and timber lands.

Vital Statistics.—The population is two hundred and forty-one. There have been ten deaths and eight births during the year.

Health and Sanitation.—A slight epidemic of measles visited these Indians during the spring. It was soon eradicated, and no fatalities resulted in consequence. Otherwise the general health has been usually good. The Indians have been vaccinated, and sanitary precautions are observed, particularly in spring, to clean up and burn garbage.

Resources and Occupations.—These Indians grow considerable hay and vegetables, raise stock, chiefly horses, fish and hunt, and work as labourers and cowboys.

Buildings.—They have had rather a poor class of buildings considering situation. More attention has been given to improvement in this respect, and within the year more has been done than in many previous years together.

Stock.—They have large herds of horses, which they are improving, and some cattle.

Farm Implements.—They have a good supply of wagons, democrats, buggies, ploughs, mowers and horse-rakes.

Education.—They have no system of education other than that afforded by attendance at the Kamloops industrial school.

Religion.—They all belong to the Roman Catholic Church; have one fine church building, and are good attendants.

Characteristics and Progress.—These Indians are industrious enough, but they are too much disposed to live up to or beyond their means, and in consequence do not accumulate property as they might.

Temperance and Morality.—These Indians, as a rule, have drifted into habits of intemperance. The opportunities which they have always possessed for procuring intoxicants, and the facilities they have possessed for procuring the means to purchase them, may to a large extent account for the confirmed habit. Recently the appointment of a paid Indian constable by the Indian Department, more adequate provincial and city police, and the better example shown by the old chief, Louis, have together had a tendency to check the nuisance to a considerable extent. In other respects they are moral Indians.

Kanaka Bar Band.

Reserves.—The reserves of this band, four in number, are located on both banks of the Fraser, ten miles below Lytton. Their area is five hundred and nine acres.

Vital Statistics.—The population is fifty-six. There have been two deaths and two births during the year.

Health and Sanitation.—The general health has been good; no epidemics among them. Their houses are small and not well kept.

Resources and Occupations.—These Indians can produce very little from the soil. Fishing and mining are their chief occupations.

Buildings.—They have a poor class of log buildings.

Stock.—They have a few inferior saddle ponies and a few head of cattle.

Farming Implements.—They have sufficient implements for the little land that can be worked.

Education.—They have no means of education.

Religion.—They all belong to the Anglican Church. They have no church-building. When they can, they attend at Lytton.

Characteristics and Progress.—A number of them are hard workers in those pursuits which they follow, but they are making little progress.

Temperance and Morality.—They are temperate and moral.

Lytton Band.

Reserves.—The reserves, twenty seven, of this band, which is composed of several small bands, are dotted along both banks of the Fraser from Lytton to Nesikep, twenty-five miles above. The combined area is ten thousand two hundred and ninety-two and fifteen-one-hundredths acres, composed of table land and mountain slopes, where cereals, vegetables and fruits produce well with irrigation. Further up from Lytton there is a fair amount of pasturage.

Vital Statistics.—The population numbers four hundred and sixty-three. There have been twenty-one deaths and eighteen births during the year.

Health and Sanitation.—No epidemic has visited these Indians. They have been vaccinated and sanitation is good.

Resources and Occupations.—These Indians are able to produce a good deal of grain, hay, vegetables and fruit. They raise considerable stock, fish, hunt, mine and work in various ways as labourers, freighters and section-hands.

Buildings.—They have a fair class of buildings and many of them.

Stock.—They have horses—some good work horses—but mostly of lighter build, and a number of cattle.

Farm Implements.—They have a good supply of such.

Education.—They have no means of education, except that afforded by an attendance at All Hallows, Yale.

Religion.—They all belong to the Anglican Church. Their chief building is at Lytton town. They are very attentive worshippers.

Characteristics and Progress.—They are mostly very industrious Indians and they are making good progress in the cultivation of their land and improving their dwellings.

Temperance and Morality.—They are temperate and moral.

Nicomen Band.

Reserves.—The reserves, five in number, of this band are situated on both banks of the Thompson river between Lytton and Cook's Ferry. They contain an area of two thousand nine hundred and seventy-six and fifty-three hundredths acres, consisting of bench and mountain lands of poor quality.

Vital Statistics.—The population is forty-eight. There have been three births and two deaths during the year.

Health and Sanitation.—No epidemic has visited these Indians and general health has been good. They have been vaccinated.

Resources and Occupations.—These Indians produce small quantities of grain, hay and vegetables; fish and hunt, and have a few stock. Their chief means of living are by fishing and mining.

Buildings.—Their buildings are of logs and they are not up to date.

Stock.—They have a limited number of pack and saddle ponies and a few cattle.

Farm Implements.—Of these they have sufficient for their requirements.

Education.—They have no means of education.

Religion.—They belong to the Anglican Church, and have no church-building.

Characteristics and Progress.—These Indians are industrious in their way, but little progress is apparent.

Temperance and Morality.—They are temperate and moral.

Nicola (Lower) Band.

Reserves.—The reserves of this band, to the number of thirteen, are located along the Nicola river from near its mouth to Nicola lake. Hamilton Creek reserve is also included. The total area is thirty-one thousand one hundred and ninety-one acres, containing a good percentage of agricultural and grazing lands.

Vital Statistics.—The population is three hundred and sixty-four. There have been fourteen deaths and thirteen births during the year.

Health and Sanitation.—The general health of these Indians has been good. No contagious diseases have attacked them. They have been vaccinated; their houses are well kept, and sanitary conditions generally are good.

Resources and Occupations.—These Indians farm and raise stock extensively. They fish and hunt but little, and engage as labourers and cowboys. Their chief occupation, apart from tilling their farms, is freight-hauling, for which they are well equipped with horses and wagons. They do most of the freighting carried on between Cook's Ferry and Similkameen.

Buildings.—They have a good class of buildings.

Stock.—They have good herds of superior horses. Some of them can turn out as fine a four-horse freight team as can be seen anywhere. They have also a number of good cattle.

Farm Implements.—They are well supplied with all kinds of implements usually required.

Education.—No means of education exists among them.

Religion.—The majority of them, two hundred and ten, are Anglicans; the remainder are Roman Catholics. The former have a good church at Mammet reserve and a small one at Zoht. The Roman Catholics have no building. All manifest considerable interest in religion.

Characteristics and Progress.—These Indians are very industrious. Those occupying the Mammet reserve are among the most advanced in the agency in the cultivation of their land. They are making substantial progress and are improving their condition. They are law-abiding.

Temperance and Morality.—They are fairly temperate and moral.

Nicola (Upper) or Spahamin Band.

Reserves.—The reserves, eight in number, of this band are located near the head of Nicola lake and around Douglas lake. They have an area of thirty thousand eight hundred and eighty-eight acres, comprising good farming land and some of the best grazing lands in the province.

Vital Statistics.—The population is one hundred and eighty-six. There have been four deaths and five births during the year.

Health and Sanitation.—No epidemic has visited them and health has been good. Sanitary conditions are most favourable.

Resources and Occupations.—These Indians carry on mixed farming and quite extensive stock-raising, they fish and hunt to some extent and engage in freighting and as labourers and cowboys.

Buildings.—They have a good class of buildings.

Stock.—They have large herds of superior horses, and good herds of well bred cattle. As good animals can be procured from these Indians as can be found anywhere in the country.

Farm Implements.—They are well supplied will all necessary farm implements.

Education.—There are no schools among them. A few have attended the Kamloops industrial school.

Religion.—They all belong to the Roman Catholic Church; they have two good churches, and they show a great interest in church matters.

Characteristics and Progress.—These Indians are very industrious and up-to-date. Many of them are in consequence well off. Johny Chilliheetsa, the chief, a model Indian in every respect, has upwards of a thousand head of as good horses and cattle as can be found on the majority of stock ranches. Jimmy Michell is also a well-to-do Indian; and others in a lesser way could be mentioned.

Temperance and Morality.—They are exceptionally temperate and moral.

Neskainlith or Halant Band.

Reserves.—The reserves of this band, numbering three, are located on the Thompson river near Shuswap lake. They have an area of six thousand nine hundred and ninety-six acres, composed of good agricultural, grazing and timber lands.

Vital Statistics.—The population is one hundred and fifty-two. There have been eight births and five deaths during the year.

Health and Sanitation.—The general health has been good, and sanitary conditions are favourable.

Resources and Occupations.—These Indians have come to farm extensively and raise considerable stock. They fish and hunt to some extent, and are employed as labourers in various ways. Farming is their chief means of living.

Buildings.—They have a fair class of buildings.

Stock.—They possess a number of fairly good horses and cattle.

Farm Implements.—They are well supplied with all farm implements.

Education.—They have no means of education except attendance at the Kamloops industrial school.

Religion.—They all belong to the Roman Catholic Church; have one fine building and attend well.

Characteristics and Progress.—These Indians are industrious and law-abiding. They have made good progress in farming since the completion of their irrigation ditches.

Temperance and Morality.—They are temperate and moral.

North Thompson or Chuchuqualk Band.

Reserves.—The reserves of this band are situated on the North Thompson river about fifty miles from Kamloops. The total area is three thousand two hundred and thirty-nine acres, comprising good farming and timber lands.

Vital Statistics.—The population is one hundred and twenty-nine. There have been two deaths and nine births during the year.

Health and Sanitation.—The general health has been good; no contagious diseases among them. Their houses are not comfortable nor sanitary.

Resources and Occupations.—These Indians farm to some extent, mostly hay and vegetables, and raise a few stock. Fishing and hunting, chiefly the latter, occupy much of their time. They are far from market for farm produce.

Buildings.—They have a wretchedly poor class of buildings.

Stock.—They possess a few horses and cattle.

Farm Implements.—They are fairly supplied with implements.

Education.—There are no schools among them. A few have attended Kamloops industrial school.

Religion.—They all belong to the Roman Catholic Church; have one comparatively good building, and are among the most faithful adherents.

Characteristics and Progress.—These Indians are industrious in their way, but appear to lack energy. They are making some progress in farming. They do little more than exist. They are a very peaceable and law-abiding people.

Temperance and Morality.—They are very temperate and moral.

Okanagan or Nkamaplix Band.

Reserves.—The reserves, ten in number, of this band are located around the head and both sides of Okanagan lake. They have an area of twenty-nine thousand seven hundred and ninety acres, good farming and grazing lands.

Vital Statistics—The population is two hundred and thirty-six. There have been eighteen deaths and sixteen births during the year.

Health and Sanitation.—There has been no epidemic among these Indians. The high rate of mortality has been due to natural causes. Sanitary conditions are as good as in many other places. A limited percentage have been vaccinated.

Resources and Occupations.—These Indians farm very extensively, fish and hunt a little, and derive quite a revenue yearly from hop-picking in the vicinity; they also raise considerable stock. They are the largest wheat-producers in the agency.

Buildings.—They have a very fair class of buildings, mostly frame.

Stock.—They have numerous horses of good quality and some cattle.

Farm Implements.—They are well supplied with farm implements, including binders and a steam thresher.

Education.—There are no schools among them. Some attend Kamloops industrial school.

Religion.—All but one, the chief, Louis Jim, are classed as Roman Catholics. The chief is a pagan, though he has built a church of his own and conducts some form of worship. They have two churches at Head of the Lake and a small one at Duck Lake. Those of one section of them are strict adherents; those of another pay little attention to church matters.

Characteristics and Progress.—These Indians are industrious and many of them farm very well. Some of them are inclined to be wild, and infractions of the law are too common. However, there has been in recent years some improvement in this respect. The price of wheat is low and they do not do more as a rule than make ends meet.

Temperance and Morality.—Some of them are addicted to the use of intoxicants, and morally some of them do not come up to the standard among Indians.

Oregon Jack Creek (Pasco Nepa) Band.

Reserves.—The reserves of this band, numbering seven, are situated on both banks of the Thompson, a short distance below Ashcroft, and on Oregon Jack creek. The area is two thousand three hundred and eighty and seventy hunredths acres, mostly inferior in quality.

Vital Statistics.—The population is twenty. There has been one death and one birth during the year.

Health and Sanitation.—No epidemic has prevailed and sanitary conditions are fair.

Resources and Occupations.—These Indians raise some farm produce and stock ; they fish and hunt, and work as labourers.

Buildings.—They have a fair class of log buildings.

Stock.—They have a fair proportion of stock, chiefly horses.

Farm Implements.—They have sufficient implements.

Education.—These Indians have no means of education.

Religion.—They all belong to the Anglican Church ; they have no building.

Characteristics and Progress.—They are industrious, but are unable to produce much from their land ; they make a comfortable living.

Temperance and Morality.—They are temperate and moral.

Osoyoos or Nkamip Band.

Reserves.—The reserves of this band, two in number, are located at the head of Osoyoos lake and at the foot of Dog lake. They contain an area of thirty-two thousand one hundred and sixty-eight acres, some fair farming and fruit-growing land, but the greater portion grazing.

Vital Statistics.—The population is sixty-three. There have been eight deaths and eight births during the year.

Health and Sanitation.—No contagious disease has visited this band. Houses are fairly clean and other sanitary conditions favourable. Indians have been vaccinated.

Resources and Occupations.—These Indians produce cereals, vegetables, fruit and raise stock ; they fish and hunt and work a little in various capacities.

Buildings.—The older style of buildings are poor log structures. Recently some good substantial houses have been built.

Stock.—These Indians have a good number of horses and some cattle.

Farm Implements.—They are well supplied with farm implements.

Education.—They have no means of education.

Religion.—They all belong to the Roman Catholic Church, have one old-time building, and are strict observers of religious duties.

Characteristics and Progress.—These Indians are fairly industrious. A few of them have nice fruit orchards and raise considerable fruit. Baptise and John Stilkiah are the best examples in this respect. The former also runs a small dairy.

Temperance and Morality.—They are fairly temperate and moral.

Penticton Band.

Reserves.—The reserves of this band, numbering three, are located at the foot of Okanagan lake, No. 3 reserve being on the west side of the lake twelve miles from No. 1 ; they contain good natural meadows, excellent farming and fruit-growing lands, and fine grazing. The total area is forty-eight thousand six hundred and ninety-four acres.

Vital Statistics.—The population is one hundred and forty-five. There have been eight deaths and eight births during the year.

Health and Sanitation.—No epidemic has visited this band, and there has not been much sickness among them. Their houses are well kept and sanitation is good. They have been vaccinated.

Resources and Occupations.—These Indians engage in general farming, stock raising and fruit-growing; fish and hunt, freight and pack and work as labourers and cowboys.

Buildings.—Their dwellings of the older class are but medium; latterly, especially within the year, some very neat and comfortable houses have been built.

Stock.—They have a good many horses and cattle of good quality.

Farm Implements.—They are well supplied with farm implements.

Education.—They have no schools.

Religion.—They all belong to the Roman Catholic Church, have one respectable church-building, and show great interest in religious matters.

Characteristics and Progress.—These Indians are industrious and many of them are well-to-do. For a time, for lack of police supervision and facilities for enforcing the liquor law, little progress was noticeable. Conditions in this respect have become improved, and there is more than a corresponding improvement apparent among the Indians, and good progress is noticeable.

Temperance and Morality.—They have become very much improved in habits of temperance, and their morals are fairly good.

Shuswap (Little Lake) or Kuant Band.

Reserves.—The reserves, five in number, of this band are located at the head of Little Shuswap lake and on Salmon arm. Their total area is seven thousand eight hundred and forty acres, the larger portion of which is timbered; some open country and grazing exists around the head of Little lake.

Vital Statistics.—The population is eighty-two. There have been four deaths and seven births during the year.

Health and Sanitation.—There has been no contagious disease affecting them, and little sickness among them. Sanitary conditions are favourable, and the Indians have been vaccinated.

Resources and Occupations.—These Indians farm a little, chiefly on land which they have cleared, raise a few stock; hunt and fish; sell wood from land they are clearing or under permit, and work as labourers in various ways.

Buildings.—They have a superior class of log and frame buildings.

Stock.—They have a limited number of horses and cattle.

Farm Implements.—They have a fair supply of farm implements.

Education.—There are no schools among them.

Religion.—They all belong to the Roman Catholic Church; have one fine church building, and are good attendants.

Characteristics and Progress.—These Indians are very industrious and law-abiding. They are making good progress in the clearing of their land, but they have not the advantages possessed by many other bands.

Temperance and Morality.—They are a very temperate and moral band.

Similkameen, Lower and Upper Bands (Chuchuwayha, Ashnola and Shennosquankin.)

Reserves.—The reserves of these bands, numbering seventeen, are located along the Similkameen river from the boundary line to Princeton. The area of the lower reserves is nineteen thousand four hundred and seventy-two acres; and that of the upper reserves is six thousand four hundred and thirty-eight, containing generally good bottom, bench and grazing lands.

Vital Statistics.—The population of Lower Similkameen is one hundred and thirty. There have been four births and one death during the year. The population of Upper Similkameen is fifty. There have been three deaths and one birth during the year.

Health and Sanitation.—The health of these bands has b en good ; no epidemic has visited them. They have been vaccinated, and sanitation is good.

Resources and Occupations.—These Indians farm and raise stock quite extensively, fish and hunt, freight and pack, and work as labourers and cowboys.

Buildings.—They have only a moderately fair class of log buildings.

Stock.—They possess a number of good horses and cattle.

Farm Implements.—They are supplied with all necessary farm implements.

Religion.—They are all Roman Catholics ; they have two churches, one at Chuchuwayha and one at Shennosquankin, and they are religiously inclined.

Characteristics and Progress.—These Indians are industrious and law-abiding ; they are making good progress in farming and stock-raising. In the latter occupation the brothers William and Paul Terrabaskett and Ashnola John take the lead.

Temperance and Morality.—They are fairly temperate and moral.

Siska Band.

Reserves.—The reserves, seven in number, are located on the Fraser river, a short distance below Lytton. The area is five hundred and fifty-nine and twelve hundredths acres, mostly unproductive.

Vital Statistics.—The population is thirty-two. There have been three deaths and one birth during the year.

Health and Sanitation.—No epidemic has prevailed. Their houses are not well kept and properly ventilated. They remove from them during summer.

Resources and Occupations.—These Indians produce little from their lands ; their chief occupations are fishing and mining.

Buildings.—They have a poor class of buildings.

Stock.—They have but little stock. Their horses are for riding and packing.

Farm Implements.—They have use for few.

Religion.—They all belong to the Anglican Church and they attend the church at Lytton.

Characteristics and Progress.—There are few able-bodied Indians among them, and they do little more than get a living.

Temperance and Morality.—They are temperate and moral.

Skuppa Band.

Reserves.—The reserves of this band are on the left bank of the Fraser river, between Lytton and Siska. They have an area of two hundred and sixty-eight acres, and are capable of producing little.

Vital Statistics.—Population and other statistics have been included in Lytton band, with which they are identified.

Spallumcheen Band.

Reserves.—The reserves, three in number, of this band are located on the Spallumcheen and Salmon rivers. They contain an area of nine thousand six hundred and seventy-nine and seventy-four hundredths acres, mostly agricultural and timber lands. There are some good pasture-lands on Salmon river.

Vital Statistics.—The population is one hundred and thirty-five. There have been five deaths and eight births during the year.

Health and Sanitation.—No epidemic has visited these Indians, their houses are well kept and sanitation good. They have been vaccinated.

Resources and Occupations.—These Indians farm and raise some stock; fish and hunt, and work as labourers in various ways. Their chief occupation is farming.

Buildings.—They have a numerous and good class of buildings.

Stock.—They have a good class of horses and some cattle.

Farm Implements.—They have a good outfit of all kinds of farm implements usually required.

Education.—They have no schools.

Religion.—They are all Roman Catholics; have a good church-building, and are good-living people.

Characteristics and Progress.—They are a very industrious band, and the most of them are comfortably well off.

Temperance and Morality.—They are exceptionally temperate and moral Indians.

Spuzzum Band.

Reserves.—The reserves, numbering six, of this band are on the Fraser river some distance above Yale. They have an area of four hundred and fifty-six acres, containing small patches of tillable land.

Vital Statistics.—The population is one hundred and fifty-nine. There have been three deaths and three births during the year.

Health and Sanitation.—No epidemic has visited them, and general health has been good. They have been vaccinated. Houses are clean and sanitary conditions good.

Resources and Occupations.—These Indians produce small quantities of fruit and vegetables. Their chief occupations are fishing, mining, and working on the railroad.

Buildings.—They have a fair class of buildings.

Stock.—Their stock consists of a few small horses and cattle.

Farm Implements.—They have sufficient implements for their requirements.

Education.—They have no school on the reserve. Some have attended All Hallows, Yale, and a few have attended the public school established at Spuzzum station. They have made good progress.

Religion.—They are about equally divided between Roman Catholics and Anglicans; they have two church-buildings.

Characteristics and Progress.—These Indians are industrious and law-abiding. Their means of acquiring a living are limited and progress is consequently slow.

Temperance and Morality.—They are very temperate and moral.

Coldwater Band.

Reserves.—The reserves three in number, of this band are located on the Coldwater river in Nicola. They have an area of six thousand two hundred and seventy-six and a half acres, containing farming, grazing and timber lands.

Vital Statistics.—The population is one hundred and twelve. There have been five deaths and six births during the year.

Health and Sanitation.—No epidemic has prevailed, and the health generally has been good. The Indians have been vaccinated, and sanitation about houses and village is well regarded.

Resources and Occupations.—These Indians farm and raise stock; fish and hunt; freight and pack, and work in various ways as labourers.

Buildings.—They have a good class of buildings.

Stock.—They have a number of good horses and cattle.

Farm Implements.—They are well furnished with implements.

Education.—They have no school. Some have attended the Kamloops industrial school.

Religion.—They all belong to the Roman Catholic Church; have a good church building, and are very religious people.

Characteristics and Progress.—They are very industrious, steady and law-abiding Indians. Violation of law is almost unknown among them. They are making good progress in farming and improvements, but they are not a wealthy band.

Temperance and Morality.—They are a highy temperate and moral people.

General Remarks.—The Indian women of the different bands assist materially towards the maintenance of the household by the gathering and preserving of wild berries in season: by the manufacture of buckskin and, especially among the Fraser Indians, of a very high grade of cedar root basket, and by working as domestic servants for white settlers.

The industrial school at Kamloops has been kept up to the average in attendance, and has been conducted very efficiently by the Rev. A. M. Carion, principal, and the various departmental teachers and instructors under him. I do not think that an institution of this kind could be better conducted or kept in better order than this one has been.

The Lytton Indian hospital has relieved and cared for the usual number of patients. Indians who go to this institution get the best of skilled treatment and nursing. Dr. Wade, of Kamloops, is attending physician, and Miss Buie is the nurse in charge; nor must be omitted the mention of the unvarying efforts of the Venerable Archdeacon Small for the benefit, comfort and uplifting of the Indians.

I have, &c.,

A. IRWIN,
Indian Agent.

British Columbia,
Kootenay Agency,
Fort Steele, July 25, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report for the year ended June 30, 1902.

Location of the Agency.—The agency is situated in the southeast portion of British Columbia and is bounded by the Rocky mountains on the north and east, by United States territory on the south and by the Okanagan agency on the west.

There are five reserves in the agency, viz.: the St. Mary's, Tobacco Plains, Columbia-Kootenay, Lower Kootenay or Flatbow and the Shuswap or Kinbaskets.

In addition, there is an industrial school reserve at St. Eugene village, and a small reserve surrounding the Indian office at Fort Steele.

St. Mary's Band.

Reserve.—The reserve is situated on the right bank of the Kootenay river at the mouth of the St. Mary river, and has an area of seventeen thousand four hundred and twenty-five acres. Isidore's ranch is situated in the Kootenay valley south of Fort Steele and has an area of six hundred and eighty acres. Cassimaynook's is situated south of Fort Steele Junction on the Crow's Nest Pass railway, and contains one hundred and sixty acres of meadow-land.

Bummer's Flat hay reserve has an area of one hundred and ninety acres, and is three miles north of Fort Steele on the left bank of the Kootenay river.

The natural features of the St. Mary's reserve are open bench and bottom land. The bench-land requires irrigation. There is some excellent timber growing on the reserve.

Tribe or Nation.—The Indians of the band are Kootenays who are supposed to belong originally to the Tinney or Tinneh race.

Vital Statistics.—The population of the band is two hundred and six. There were thirteen births and eight deaths, and three joined the band during the year, making an increase of eight since my last report.

Health and Sanitation.—The health of the Indians has been good. There was no epidemic amongst them. The St. Eugene's Indian village was carefully looked after, the streets swept and the refuse removed and burned, and vaccination was carefully attended to.

Resources and Occupations.—The Indians follow farming, stock-raising, cattle herding and packing to the mines; and with trapping, hunting and fishing they make a good living.

Buildings.—They have a number of dwelling-houses, stables and sheds built of logs. During the year a few new and improved dwellings have been erected at the Indian village, and the place is much improved thereby.

Stock.—They have a few good horses, a number of Indian ponies and a nice herd of cattle. There has been a demand for the ponies lately in the Northwest Territories, and the Indians have sold a large number, and with the proceeds are replacing them with a better grade of horses, and some have purchased cattle.

Farm Implements.—They are fairly well supplied with farming implements such as mowers, rakes, ploughs, wagons and sleighs.

Education.—The Kootenay industrial school is situated near the reserve and is in charge of the Rev. N. Coccola, O.M.I., as principal, assisted by the Sisters of Charity, who have proved themselves painstaking and efficient, and good work is being done at the institution. The school is for the Indian children of the different bands in the agency, and no difficulty is found in keeping up the attendance. The course of instruction consists of reading, writing, arithmetic, geography, grammar and simple history and music. The boys are taught useful trades,—carpentry, shoemaking, farming and and the care of stock; the girls, needlework, the use of the sewing-machine, dairying and housekeeping. The parents of the children visit the school from time to time and appear to appreciate the efforts that are being made to improve the condition of their children.

Religion.—The Indians of the band are Roman Catholics and they are zealous and attentive to their religious duties. They have a beautiful church at St. Eugene's village, which is well attended.

Characteristics and Progress.—They are industrious and are becoming good farmers and there is a marked improvement on the reserve.

Temperance and Morality.—They are strictly temperate and are not given to immorality.

Tobacco Plains Band.

Reserve.—The reserve is at the international boundary near the State of Montana, and has an area of ten thousand five hundred and sixty acres. The natural features

are undulating prairie-land that requires irrigation, and there is some fairly good timber on the reserve.

Tribe.—The Indians of the band are Kootenays.

Vital Statistics.—The population is fifty-six. There was one birth and two deaths during the year, making a decrease of one.

Health and Sanitation.—The health of the Indians has been good, no sickness of a contagious nature appeared amongst them. They kept their village and dwellings clean, and those requiring it were vaccinated.

Resources and Occupations.—They follow farming, stock-raising, hunting and trapping.

Buildings.—They have good dwellings of hewn logs, and sheds for their stock and farming implements.

Farming Implements.—They have a number of wagons, sleighs, mowers and rakes, which they purchased in the spring with the money they realized from the sale of ponies.

Religion.—They are all Roman Catholics and are most zealous and attentive in the observance of their religion. A new frame church is now being built on the reserve. The Indians subscribed according to their means to the building fund, denying themselves many things so that they could contribute.

Characteristics and Progress.—A marked improvement is noticeable on the reserve. The fences are kept in repair and the Indians have a larger area of land under cultivation. They are law-abiding and fairly industrious.

Temperance and Morality.—These Indians are temperate and moral; but the reserve being so near the international boundary, it is difficult at times to safeguard them from evil influences.

Lower Columbia Lake Band.

Reserve.—This reserve is situated in the Columbia valley between Lakes Fairmont and Windermere and the Rocky mountains, and contains eight thousand four hundred and fifty-six acres.

Tribe or Nation —The Indians on this reserve are Kootenays.

Vital Statistics.—The population is seventy-two. There were two births and no deaths, making an increase of two during the year.

Health and Sanitation.—There was no sickness in the band, and the general health was good. The sanitary condition of the dwellings and their surroundings was excellent, and the Indians who required it were vaccinated.

Resources and Occupations.—These Indians farm extensively and raise good crops. A few follow hunting and trapping. They raise horses and cattle and have improved both by the introduction of good stallions and bulls amongst their herds.

Buildings.—Their houses and outbuildings are built of logs and a number still use tents to live in during the summer and fall.

Farming Implements.—They are well supplied with farming implements, which are carefully housed in the winter.

Religion.—The religion of the band is Roman Catholic. They have a neat church, which was enlarged recently. They are attentive to their religious duties and are zealous and devout.

Characteristics and Progress.—The majority of these Indians are industrious and take a great interest in their farms and stock. During the threshing season many of them are employed by the white settlers to assist them threshing, going from farm to farm with the machine.

Temperance and Morality.—They are a temperate and moral people.

Lower Kootenay Band.

Reserve.—The reserve is situated in the West Kootenay district on the right bank of the Kootenay about three miles north of the Idaho boundary line, and has an area of one thousand eight hundred and thirty-one and a half acres.

Tribe.—The Indians belong to the Kootenay tribe and speak the same language as the St. Mary's band.

Vital Statistics.—The population is one hundred and seventy-two, an increase of three. There were eleven births and seven deaths, and one left the band for Idaho, having married into the Bonner's Ferry tribe.

Health and Sanitation.—Small-pox appeared amongst these Indians in the latter part of January. The disease, no doubt, was brought in some way from Idaho. Prompt measures were taken to check and stamp it out by quarantining those who were exposed and vaccinating and re-vaccinating all belonging to the band, burning the clothing of those who had the disease and disinfecting the different dwellings. There were no deaths from the disease, and those that did occur were from old age and consumption.

Resources and Occupations.—These Indians do a little farming and stock-raising, while some act as guides and packers. They also hunt, trap and fish, and during the season they make a good living by picking berries, which find a ready sale in the different towns around the Kootenay lake. A number are employed during the haying season by the Kootenay Reclamation Company, and the foreman reports their work as satisfactory and their conduct very good.

Buildings.—Their buildings are small log dwellings, and they have a few good barns. As they are nomadic in their habits, the majority live in tents.

Stock and Farming Implements.—They have some good cattle, which they look carefully after in the winter, cutting sufficient hay to carry them safely through. Their ponies are not very valuable and so far they have made but little effort to improve the breed. They have sufficient farming implements for their purpose.

Religion.—The religion of the band is Roman Catholic and they are attentive and zealous, and assemble in their church regularly for service. A missionary visits them frequently and instructs them in their religious duties. Their church is a log building scarcely suited for a place of worship, so they are making an effort to build a new church on the bench-land near Goat river.

Characteristics and Progress.—Many of these Indians are good workers, and the majority are law-abiding. An Indian of the band named Anasta, planted in the spring one hundred and fifty fruit-trees, which are doing nicely and which will in a few years, if carefully looked after, bring him a fair income. The bench-lands of the Lower Kootenay are admirably adapted for raising all kinds of fruit, and there is a good market amongst the mining towns of the district.

Temperance and Morality.—With a few exceptions these Indians are temperate and moral.

Shuswap or Kinbasket's Band.

Reserve.—This reserve is situated on the right bank of the Columbia river, opposite the mouth of Toby creek, in the Windermere district in East Kootenay, and contains two thousand seven hundred and fifty-nine acres.

Tribe or Nation.—These Indians are Shuswaps and came from the Shuswap Lake country, in the Okanagan agency, over forty years ago. They speak the Shuswap language and the majority understand English.

Vital Statistics.—The population of the band is fifty-six, being an increase of two during the year. There were three births and no deaths. One Indian woman of the band married a white man and removed from the reserve.

Health and Sanitation.—The health of these Indians has been good. Their houses are comfortable and are kept clean and neat. All the Indians have been vaccinated.

Resources and Occupations.—Farming and stock-raising are their principal occupations, while a few freight from Golden in the winter for the merchants; others are employed hauling ore from the mines to the Columbia river, and one or two of the older ones trap and hunt during the season. They raise good grain, hay and vegetables, which find a market at the mines in the district.

Buildings and Stock.—They have the best dwellings in the agency and good stables and barns, and their horses are greatly improved, as they own several well-bred stallions. They have also a good herd of cattle.

Farming Implements.—They are well supplied with threshing-machines, mowers, rakes, wagons, sleighs, ploughs and harrows, which are carefully put away in the winter.

Religion.—All these Indians are Roman Catholics. They have a neat church on the reserve, to which an addition has been built recently.

Characteristics and Progress.—They are making marked progress, as they are good farmers and look after and repair their fences. They save and use manure, and understand routine cropping and summer-fallowing. A few have planted fruit-trees, which are doing well.

Temperance and Morality.—On the whole, this band is temperate and moral.

General Remarks.—The Indians of this agency are steadily improving and the industrial school has helped in a great measure to bring about the change. The ex-pupils are sought after by the Indians to assist them in farming, fencing and building, and their usefulness and knowledge is readily recognized by those who employ them.

Two of the pupils, François and Ignatius, who learned carpentry at the industrial school, have been kept steadily employed building cottages at the St. Eugene's village, and the work done by them would do credit to workmen of more experience.

I have, &c.,

R. L. T. GALBRAITH,
Indian Agent.

British Columbia,
Kwawkewlth Agency,
Alert Bay, July 10, 1902.

The Honourable
The Superintendant General of Indian Affairs,
Ottawa.

Sir,—I have the honour to forward my first annual report, together with agricultural and industrial statistics for the fiscal year ended June 30, 1902.

Location of Agency.—This agency extends from Cape Mudge on Valdez island to Smith's inlet, including all the islands between these two points; the mainland from Bute inlet to Smith's inlet; the east side of Vancouver island from the 50th parallel of latitude to Cape Scott; also, all the villages and reserves on Quatsino sound on the west coast of Vancouver island.

Reserves.—The area of the reserves is seventeen thousand and fifty-two acres. Although all heavily timbered, the greater part of the soil is rocky and worthless.

Tribe or Nation.—All these Indians belong to and are branches of the Kwawkewlth nation.

Vital Statistics.—The combined population of all the bands in this agency is one thousand three hundred and fifty-nine, including men, women and children. This being

my first census, as well as being the worst time of the year for taking it, it is quite possible the number may show up better next time.

Health and Sanitation.—The health of the Indians during the past year has been good, exceptionally so. Since my arrival here on April 12, there has been no epidemic among them of any kind.

The principal trouble with which I have to contend is in regard to their drinking water. In several villages the water-supply for this purpose is totally unfit for use. In the Klawitsis village the water they were using was very foul; I got them to dig a well a few feet from the swamp where they had been getting it, and in gravelly soil, where to their astonishment they got beautiful, clear water.

Vaccination has been pretty regularly attended to, as also the keeping of their houses and surroundings clean and free from decaying rubbish. They do fairly well in this respect.

Resources and Occupations.—The occupations of these Indians consist of logging, fishing, hunting and trapping. During the salmon run they fish for the canneries, cut cord-wood, manufacture curios for sale, make canoes, manufacture large quantities of oulachon oil for sale and their own use, and some of the bands dry large quantities of halibut for sale. Others again put up considerable dulce or seaweed, which ist largely used by them for food. Some few formerly went sealing, but since several of them went away some years ago and never came back again, I believe they have given that up altogether. The women work in the canneries, make nets, mats, baskets, and gather and dry berries for winter use, and besides provide the clams, crabs and other shellfish used by them for food.

Very little attention is given to agricultural pursuits. The soil for the most part is dry, and generally besides very hard to clear of the heavy growth of timber. It seems to be contrary to the nature of these Indians to till the soil. Their forefathers for hundreds of generations back made their living by fishing and hunting; they have always done the same thing, and it is next to impossible to get them to take any new departure. I would as soon try to get a farmer from Illinois to grow anything but corn.

Buildings, Stock and Farming Implements.—The most of the houses of these Indians are still built in the old style,—big heavy logs and posts for a framework and inclosed with split cedar boards. They are generally built pretty high, with an opening at the top to let the smoke out. They are well ventilated, and not injurious to health when kept clean.

The Indians are beginning lately to build more small frame houses, and it is noticeable that they are kept much cleaner than the large houses where several families live ogether.

Of stock they have little, if any. They move around from one place to another so much that when they tried to raise cattle or hogs these invariably went wild and had to be killed.

These Indians have no farming implements; they have no use for them, as they do no farming.

Education.—There are three day schools in this agency, besides an industrial school for boys and a girls' boarding school or home. There is one day school at Alert Bay under the management of Mrs. A. J. Hall. The industrial school is also located here and is under the management of Mr. A. W. Corker, Mrs. Corker acting as matron, while Mr. W. Halliday fills the position of trades instructor. Mr. A. E. Bird is teacher at the Quace school, and Rev. R. J. Walker at Cape Mudge.

Religion.—There is quite a commodious church at Alert Bay, and the spiritual welfare of the Indians is looked after by the Rev. A. J. Hall, Anglican missionary. Mr. Bird at Quace and the Rev. Mr. Walker (Methodist) at Cape Mudge, conduct divine service every Sunday in their respective villages. Some few of the Indians take quite an interest in religion, but the majority of them are totally indifferent.

Temperance and Morality.—These Indians, I am sorry to say, are very immoral—that is, a very large majority of them. There are, of course, some of them who are

good-living people and who also try to influence others of their tribe for the better; but they are only a small minority and can effect very little in the way of reform.

Their marriage contracts are so loose and free that they do not seem to have any effect towards keeping them in the paths of virtue and rectitude. There is no doubt that their marriage customs are largely the cause of so much immorality.

These Indians are not naturally inclined to intemperance more than any of the other aborigines on this coast. If they use more intoxicants, it is because the facilities for obtaining them are greater. A large majority would have a stop put to the traffic in liquor amongst them if they could. I have been requested by chiefs of several different bands to stop the white men from bringing in whisky and selling it to the Indians. I promised them to do my best to keep liquor out, but it is difficult to do anything, situated as I am on a small island, without any means of getting around amongst them except by canoe.

One instance came under my own personal observation. A Wiwaikai Indian left his own band, went one hundred and fifty miles further north, and joined the Nuwittis, where he would be less exposed to temptation.

There is no use trying to disguise the fact that the Indians of this agency have made less progress towards civilization than any others on the coast. This can be attributed in a large measure to the ease with which they can secure whisky. The area of the district is so great, and it is so cut up with inlets, channels and other waterways, that the distance to be covered in order to get over it is something enormous considering my present mode of travelling; hence it is impossible to go about among and look after the Indians as the agent should.

Characteristics and Progress.—The Indians of this agency cannot by any means be considered peaceable and law-abiding. It was only last winter that a gunboat had to be sent up to bring them to their senses. The reason for this can in a great measure be attributed to the indifferent police service in this district. There are two constables—one at Shoal Bay and one at Alert Bay. Their district extends from Texada island to Rivers inlet, a distance of about one hundred and ninety miles in a straight line, besides which there are thousands of miles of inlets, channels, &c., to be traversed where are scattered Indians, fishermen, logging camps, traders and renegades. This is the territory where the whisky-pedlars flourish. Neither one of the officers has any means of travelling except by canoe, and so can accomplish but little.

The Indians are fairly industrious and would no doubt become prosperous could liquor be kept from them and they be induced to abandon their old Indian ways.

As to their general improvement, although I have been among them off and on for the last twenty years, I have not been in a position to observe what has been accomplished in that respect until about three months ago when I took charge of this agency. I hope to be able to give a fuller and better report in 1903.

I have, &c.,

G. W. DeBECK,
Indian Agent.

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Metlakatla (B.C.) Industrial School (Boys') at close quarters: pupils away, for most part, on Summer holidays.

British Columbia,
Northwest Coast Agency,
Metlakatla, August 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report respecting Indian affairs of this agency for the year ended June 30, 1902, together with a tabular statement of statistics and a list of government property in my care.

Vital Statistics.—During the year just past the births and deaths amongst the Indians have been equal: one hundred and thirty-four each. The population has, however, been increased by the arrival of six Indians (Haidas) from Alaska, and two from the Laird River country, to reside permanently in this agency, making a total Indian population of four thousand one hundred and forty-nine, an increase of eight for the year.

The five nations of Indians composing the twenty-three bands in this agency have increased or decreased as follows: the Haida nation of two bands, numbering six hundred and thirty-four souls, has increased by six, caused by accessions from abroad; the Nishgar nation of the Nass River valley, of seven bands, numbering eight hundred and forty two souls, has decreased by one; the Tsimpsean nation of Skeena river and vicinity, six bands, numbering one thousand four hundred and forty-one, has increased by four; the Oweekayno nation, on the coast and islands, of five bands, numbering nine hundred and twenty-one, has decreased by one; and the Tallion nation of three bands, numbering three hundred and eleven, has remained stationary.

Health and Sanitation.—Since my last report the Indians have been visited at two different settlements by an epidemic of small-pox. Like that of last year the disease was brought from Alaska to Kitangata on Nass river by an Alaska Indian family who came over during the Christmas holidays upon a visit to relatives.

Before leaving for their home they presented their friends with a box of dried clams, which unknown to any one contained the germs of small-pox. The first person attacked by the disease, being a feeble old man, died the fourth day. This was the only death resulting therefrom. There were ten cases on the Nass river, but the disease was stamped out by the end of the month of March. During the month of May, however, three other cases of small-pox came to Port Simpson in this agency from northern Alaska, being three patients in a family of five Indians returning home to Port Simpson after a protracted visit. The disease was confined to this family. No deaths resulted, and at the end of May the family were free from quarantine. There is now no epidemic disease of any kind in the agency. Pulmonary troubles are the principal cause of mortality amongst the Indians.

Sanitary precautions have been taken by all the Indians through their municipal councils and Indian chiefs. Families living in villages are obliged to keep their houses and premises clean under penalties imposed for neglect of sanitary by-laws and regulations established amongst them.

Occupations of Indians.—The principal industrial pursuits of our Indians are salmon-fishing and canning, procuring saw-logs for the three saw-mills of the Northwest coast, the Oulachon fishing industry, hunting and trapping, fur-seal hunting, procuring and drying herring spawn, catching and drying salmon and halibut for food, boat and canoe making, and cutting fire-wood for the use of the salmon canneries. On the Queen Charlotte islands the catching of dogfish and extracting their oil has assumed large proportions and is quite remunerative.

The earnings of Indians at the salmon-canning industry has become of paramount importance, almost everything else being neglected during the months of June, July and August each year.

The amount of money earned at this business has increased since my last report by $20,000. Other industries have, however, fallen off to the amount of $4,000.

Agriculture.—Agricultural pursuits amongst the Indians are languishing through the fact of the population of all the settlements going away to the canneries, leaving only a few aged persons to attend to gardening and the potato crops.

Education.—The Indian day schools of this agency, fourteen in number, are fairly successful in educating the Indian children, notwithstanding the fact that most of the pupils are taken away from the vicinity of the schools during the hunting and fishing seasons, which is a drawback very discouraging to the missionary teachers, but which cannot at present be wholly remedied. Many of the teachers, however, follow the children to the canneries and endeavour to keep up the schools there.

The industrial and boarding schools, three in number, are in a manner free from that disability, being able to keep their pupils at school all the year round.

Religion.—There has been no change during the year in the religious beliefs and professions of the Indians; those claiming to be Salvation Army and Church Army people have for some years past been rated as belonging to their respective established churches, the Methodist and Anglican Churches, the only two religious denominations yet established in this agency.

The Indians and their families claiming to belong to the Methodist Church number two thousand three hundred and nine, and to the Anglican Church, one thousand two hundred and two. The pagans number six hundred and thirty-eight. The pagans call themselves 'heathens' after the name given to them by the Christian Indians and some of their early teachers. This name 'heathen' at first meant opprobrium; but it has crystallized into meaning a cult or 'ism' of which the pagans are quite proud.

Bands and Reserves.

The Haida nation of two bands and villages Massett and Skidegate, both Indian names, are situated on the Queen Charlotte islands, and are composed of the united groups of many old-time bands, which some sixty years ago numbered many thousand of Indians, subsequently decimated by small-pox and other diseases, and whose old village sites with their forests of totem poles still remain.

Massett village stands at the entrance to Massett inlet at the extreme north of the islands, on a point of land lying between the inlet and the open water of Dixon entrance. It is a healthful and beautiful place. The village consists of seventy-four dwelling houses, a large hands me church, a school-house, a society-hall and mission-buildings, a resident Anglican minister, the head teacher, a native assistant teacher, an Indian council of chiefs, an efficient fire company and a brass band. There are two trading stores in the village. This settlement has no communication with any other settlement except by schooner or canoe over open water for eighty miles.

The second Haida village named Skidegate is situated on the north shore of Skidegate inlet, near the centre of the Queen Charlotte islands, at the foot of a mountain overlooking a beautiful bay with an extensive sand beach in front. The village consists of sixty-three dwelling-houses, a church, school-house and a society-hall, a Methodist minister resides there on a part of the reserve set apart for the mission-buildings. A white woman teaches the Indian day school. On the reserve stands a dogfish oil manufactory owned by the Indians, giving employment to many fishermen and others. There is also a well furnished trading store owned by the Indians. The village has a very good fire company and a brass band. The people are served with a monthly mail. The Nishgar nation, consisting of seven bands, each with its own village and reserves of land, occupies the Nass River valley from the sea to the head of navigation, some fifty-five miles from the river-mouth.

These Indians have large reserves of land, much of which is capable of being utilized as agricultural land. Only one band, however, that of Aiyensh has shown any desire to cultivate the soil beyond that of small gardens of potatoes and vegetables.

Kincolith is the first village of the Nishgar Indians situated on the north side of the estuary of the Nass river on a low flat plot of land at the mouth of a small river, and at low tide there is an extensive sand beach in front of the settlement. The village consists of thirty-nine commodious dwelling-houses, a new and beautiful church, a school house, two society-halls, a music-hall, a council-house and lock-up, a fire company's hall, a good fire company and a brass band. The Venerable Archdeacon Collison is their clergyman and physician. The village municipal business is conducted by an elective council.

Kittex band is the next settlement fifteen miles further up the Nass River valley situated on the south bank on a narrow strip of land at the bottom of a high mountain. The village consists of five large old-style Indian frame houses. There is no public building of any kind, no church, nor school-house, and the population is yearly dwindling through removals to other villages. The village stands upon the large Lachaltsap reserve.

Lachaltsap is the third Indian settlement up the Nass River valley, situated about sixteen miles from the river-mouth on the northern bank, well sheltered from the cold Nass winds by surrounding dense forest of spruce timber, although on the western side of the village there is a large quantity of land quite easily cleared and of good quality.

The village consists of twenty-six good modern-style dwellings, a church, school-house, public hall, music-hall and two Indian trading stores. This village is governed by a council of chiefs. It stands near the centre of the large Lachaltsap reserve.

Kitangata is a small settlement two miles further up the river. Their houses stand upon both sides of the Nass river, and consist of nine old-style houses. These Indians have no church, no school-house, nor any kind of public building. The village stands near the upper end of Lachaltsap reserve.

Kitwintshilth settlement stands upon a knoll at the lower end of Nass River canyon, on the right bank just opposite an extensive lava bed which extends for many miles into the mountains in the direction of Kitsumkalem lake. The Kitwintshilth Indians, who are all pagans, have nine dwelling-houses, two of modern style. They have no church, no school-house, nor any public building. Their reserve of land is large and contains some good agricultural land. There is no Indian council, old chief Wee-shakes governs the village with mild vigour.

Aiyensh is an Indian village of comparatively new growth built quite recently on the site of an ancient village deserted long ago beyond the memory or traditions of the Indians. It is situated on the right bank of the river, about fifty miles above its mouth, on a part of the extensive Kitlacdamax reserve. The village is well laid out with wide streets and squares, and consists of thirty-seven dwelling-houses, mostly two stories high, large, and some of them are quite artistic. There is a large church recently erected by the Indians under the direction of their clergyman, doctor and teacher, the Rev. J. B. McCullagh, S. M. There is also a school house, a public hall, which is also a music-hall and council-house. The municipal business is conducted by a council of seven chiefs, with their clergyman as their secretary. This band owns and operates a steam saw-mill built by their missionary teacher. Surrounding the village is an extensive level plain of good agricultural land, and this band shows a desire to use it for agricultural purposes and stock-raising.

Kitlacdamax.—This village is the upper settlement on the Nass river, the last of the seven Nishgar bands standing on the right bank of the Nass river below the great canyon and opposite the Grease trail, which leads to the Forks of the Skeena river, one hundred miles across a level country.

Kitlacdamax village consists of twelve dwelling-houses, some of them old-style. The population, at one time the largest in the valley, has been yearly decreasing, principally through removals to settlements nearer to the coast, where there is more business and remunerative employment. There is no church, no school-house, nor any

public buildings. Upon this reserve there is an abundance of good agricultural land on both sides of the Nass river.

Tsimpsean Nation.

The Tsimpsean Indians, as a nation, stand at the head of all the Indian nationalities upon the northwest coast, in physique, general appearance and civilization. They are also the most numerous and the furthest advanced in education and arts.

Fort Simpson is the largest and the principal Tsimpsean Indian settlement, situated upon a beautiful and extensive harbour at the northwest corner of the Tsimpsean peninsula, about midway between the mouths of Skeena and Nass rivers. The Indian town adjoins the Hudson's Bay Company's headquarters on the northwest coast.

There is also a white settlement on the Hudson's Bay Company's land close to the Indian reserve.

The Indian part of the town consists of one hundred and sixty-three dwelling-houses. Many of these houses are large, well-built residences, and some artistic cottages.

On the reserve there is a large, commodious church, two Salvation Army halls, three society-halls, a double school-house, a boys' boarding school, a girls' boarding school, a fire company's hall, four Indian trading stores, two public restaurants, a glazing and paint shop, a blacksmith-shop, thr e carpenter's shops, and four boat-building establishments, all belonging to and managed by Indians.

The townsite has been surveyed and well laid out, is easily drained, and approchable by sea all along the front. The public streets are graded and very well lighted by street lamps. Their municipal affairs are controlled by an elective council. On the adjoining Hudson's Bay townsite there is an Indian hospital under the able management of Dr. A. E. Bolton and several trained nurses.

Although the area of land reserved for this band is large, there is but little good land and it is all used for gardening purposes.

Metlakatla Band.

This band resides at the old historic town of Metlakatla situated on the Tsimpsean peninsula about midway between the mouth of Skeena river and Port Simpson on the north shore of a narrow channel named Venn creek running inland about three miles from Chatham sound This was the most noted village on the coast, being the first place where mission work was established in 1863, which caused the gathering together of seven hundred and eighty scattered Tsimpseans into one place, and where various new industries were started amongst the Indians by Mr. William Duncan, of the Church Missionary Society of London.

Amongst the industries established for the benefit of the Indians were lumber and shingle manufacturing, the erection of a woollen mill for the carding, spinning and weaving the wool of sheep and goats into blankets and other woollen fabrics, the manufacture of brick, boat-building, clam and salmon canning and stock-raising (sheep and goats). These new industries did not flourish, however, but produced financial loss. They were supported by mission funds for a few years and then abandoned. During the year 1887, through troubles amongst the missionaries a great majority of the then Metlakatla band of Indians left the country and settled upon an island at Alaska.

The present village consists of forty Indian dwelling-houses, which are of modern build and are very well furnished. During last July nearly all of the mission-buildings together with the large Indian church and two school-houses and two new Indian dwelling-houses were destroyed by fire. Some of the buildings have been again erected, and an imposing new church is rising upon the site of the old historic Tsimpsean church.

There are three schools at this village, one government industrial school in two branches (boys' and girls') an Indian day school for the village children, a boarding school

for white children and the most promising half-breed children from the various coast settlements. The teacher of the white boarding school is furnished by the Provincial School Department. All the other schools are maintained by the Indian Department of Canada and the Church Missionary Society of London.

There is a village-hall, a society-hall, which is used as a music-hall, and fire company's hall. There is an excellent fire company and an Indian brass band.

The Indian agent's residence and office is on this reserve.

There is considerable good arable land on this reserve, but only a small quantity is used for gardens.

The village business is controlled by an elective council.

Kitkatla Band.

Kitkatla is the third Tsimpsean settlement and is situated on Dolphin island, lying off the mouth of the Skeena river with Hecate strait on the west. The village contains thirty-two dwelling-houses, all new and modern. There is a large newly erected church a good school-house, a new village-hall and fire company's hall. Rev. W. R. Gurd is their clergyman, teacher and physician, assisted by a native teacher.

The people are ruled by a council of chiefs. They have a fire company with a fire engine, and a brass band. They have three trading stores.

There is no arable land on this reserve.

Kitkaata Band.

This is a small Tsimpsean settlement at Hartley bay, at the entrance to Douglas channel and is known to the public as Hartley Bay village, and consists of eighteen frame buildings very well furnished. There is a church and a mission-house. A missionary resides there and teaches the children at the mission-house.

One of the Kitkaata reserves contains some good agricultural land, which is used by the people for raising potatoes.

This band has a council of chiefs and an effective fire company.

Kitsumkalem Band.

This is another Tsimpsean settlement, about forty miles up the Skeena river, on the right bank, at the mouth of Kitsumkalem river. Many of these Indians reside at Port Essington, on the estuary of the Skeena river, and own dwelling-houses there on a small portion of the Port Essington townsite, lately created a special reserve. They have been living at Port Essington for many years, still retaining and occasionally occupying their old houses and gardens at Kitsumkalem.

In conjunction with some of the Kitsalas Indians, also settled at Port Essington, they enjoy the use of a church and school, with Rev. D. Jennings as their teacher and physician, and a white woman as daily teacher. There is a large settlement of whites surrounding this special reserve at Port Essington, several salmon canneries, large trading stores, two hotels, and all the business and amusements of a thriving frontier town. These Indians have a fire company and a brass band.

Kitsalas Band.

This settlement is the last of the six Tsimpsean bands, situated about sixty-five miles up Skeena river, just below the Kitsalas canyon. The people of Kitsalas have good new dwelling-houses at their village, besides a number of less value at Port Essington.

Their new townsite, situated upon an extensive level river bench, is laid out into large town-lots with wide streets, so that the town may be in little danger of fire from the burning of one building.

These Indians have large and numerous reserves, with a considerable quantity of good agricultural land, some of which is used for potato gardens.

Oweekayno Nation.

This nation, consisting of five bands, takes its name from the Oweekayno tribe settled at the head of Rivers inlet.

These five bands speak a different language from the other four nationalities of the northwest coast. Two of its bands, Kitamatt and Bella Bella, compare favourably with the Tsimpsean nation in the physique of the people and even from a civilization point of view; the other three bands, Kitlope, China Hat, otherwise Klemtoo, and Oweekayno, are far behind in education and general advancement, Oweekayno the lowest of all. The Bella Bella people are rapidly coming to the front as a civilized band of Indians. Kitamatt is also doing well; both these tribes encourage schools, and in a measure insist upon their children attending school. They always take the children to church, and they practise family worship more than any other tribe in the agency.

The lands reserved for these five bands, although not so extensive as that of some others, is generally of a better quality and of more value to them.

Tallion Nation.

This nation of Indians, also speaking a different language from any other in the agency, consists of three bands, Kemsquit, Bella Coola and Tallion. Tallion is said to be the oldest settlement of the three and from which the nation takes its name. It is situated about ninety miles inland from the coast at the head of South Bentinck Arm, on an extensive flat of low land, covered with brush and grass. The village houses stand upon posts and are elevated about five feet above the surface of the ground, on account of tide overflow.

It is a small band, backward in civilization and enterprise, although it is generally a peaceful and well behaved tribe.

Kemsquit stands near the head of Deans channel at the mouth of Salmon river, about one hundred miles inland from the coast line. The Kemsquit tribe has neither a church nor school. They are a friendly civil people, but they lack enterprise.

Bella Coola is an important Indian village at the mouth of Bella Coola river, some eighty miles inland from the open sea. This tribe has been allotted an extensive reserve of land of good quality, which is utilized by them to a greater extent than any other in the agency. There is a church and school amongst them, and the young people are becoming quite well informed.

They trade largely with the interior Indians, using saddle horses and pack horses as the mode of travel. The Tallion Indians are mostly pagans.

General Remarks.

The Indians of the whole agency own property to the value of about three quarters of a million dollars, with an annual income of $244,456.

I have, &c.,

C. TODD,
Indian Agent.

British Columbia,
West Coast Agency,
Alberni, August 27, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to forward my annual report for the year ended June 30, 1902

Agency.—The West Coast agency extends from Otter point to Cape Cook, comprising two hundred miles of the west coast of Vancouver island.

Reserves.—There are eighteen tribes in this agency. They have one hundred and fifty reserves and fishing stations, aggregating twelve thousand three hundred and ninety acres, five acres per capita of population. There are two large reserves in Barclay sound, one at Alberni belonging to the Tseshaht tribe, containing one thousand and thirty acres including a small lake about eighty acres in extent, with some sixty acres of grass-land adjoining, the rest of the reserve being good land but mostly timbered ; the other at Numakamis, Sarita valley, belonging to the Oiaht tribe, containing one thousand seven hundred acres. On the last mentioned reserve there is good bottom land at the mouth and on the banks of the Sarita river, but part of the land is unfit for cultivation and contains large deposits of iron and copper. Sixty-seven acres of this unproductive land is leased for mining purposes for the benefit of the band. The acreage of the other reserves, ranges from two acres to two hundred and fifty acres each. The majority of these reserves are rocky, timbered or tidal lands, given for village sites and fishing stations, with only small patches of land suitable for cultivation.

Principal Reserves.

Tseshaht, No. 1 Reserve—Tsahahch, west bank of the Somas river, Alberni, one thousand and thirty acres. The population consists of one hundred and thirty-two : forty men, forty women and fifty-two children.

Opitchesaht, No. 1 Reserve.—Ahahswinnis, east bank of Somas river, Alberni, ninety-six acres. The population consists of sixty-two : fifteen men, twenty-three women and twenty-four children.

Howchuklisaht, No. 2 Reserve.—Elhlateese, at the head of Howchuklesit habour, Alberni Canal, four hundred acres. The population consists of forty-five : fifteen men, eighteen women and twelve children.

Oiaht, Nos. 7 and 8 Reserves.—Ahadzooas, part of Diana island, one hundred and fifteen acres, and Haines' island, thirty acres, eastern entrance of Barclay sound. The population consists of one hundred and fifty-nine : fifty men, fifty-five women and fifty-four children.

Toquaht, No. 1 Reserve.—Mahcoah, Village passage, Barclay sound, one hundred and twenty four acres. The population consists of twenty-three : ten men, nine women and four children.

Ewlhuilhlaht, No. 1 Reserve.—Ittatso, Ucluelet arm, Barclay sound, one hundred and sixty-two acres. The population consists of one hundred and fifty-five : forty-eight men, forty-eight women and fifty-nine children.

Claoquaht, No. 1 Reserve.—Opitsat, Clayoquot sound, one hundred and eighty acres. The population consists of two hundred and forty-five : eighty-six men, ninety-nine women and sixty children.

Kelsemaht, No. 11 Reserve.—Yahksis, Flores island, Clayoquot sound, one hundred and eighty acres. The population consists of sixty-nine : twenty-three men, twenty-seven women and nineteen children.

Ahousaht, No. 15 Reserve.—Mahktosis, Matilda creek, Clayoquot sound, two hundred and fifty acres. The population consist of two hundred and seventy-three: eighty-six men, eighty-seven women and one hundred children.

Heshquiaht, No. 1 Reserve.—Heshque, Heshquiat harbour, two hundred and twenty-two acres. The population consists of one hundred and sixty-two : forty-four men, fifty-three women and sixty-five children.

Mooachaht, No. 1 Reserve.—Yuquot, Friendly cove, Nootka sound, two hundred and ten acres. The population consists of one hundred and seventy-five : sixty-two men, seventy-five women and thirty-eight children.

Matchitlaht, No. 15 Reserve.—Cheshish, back of Bligh island, Nootka sound. twenty-nine acres. The population consists of sixty-four : twenty-two men, twenty-four women and eighteen children.

Noochahtlaht, No. 1 Reserve.—Noochatl, Esperanza inlet, sixteen acres. The population consists of seventy-four: thirty-five men, twenty-eight women and eleven children.

Ehattisaht, No. 10 Reserve.—Oke, Esperanza inlet, thirty-two acres. The population consists of one hundred and one : thirty-four men, thirty-three women and thirty-four children.

Kyukaht, Nos. 1 and 2 Reserves.—Aktese, Village island, one hundred and eighteen acres. Kukamukamees, Mission island, seventy-five acres ; Barrier islands, Kyuquot. The population consists of three hundred and five : one hundred and twelve men, one hundred and twenty-eight women and sixty-five children.

Chaicclesaht, No. 1 Reserve.—Acous, Battle bay, Ououkinsh inlet, one hundred acres. The population consists of one hundred and five : thirty-eight men, thirty-one women and thirty-six children.

Nitinaht Tribe.

These Indians live in four villages at the entrance of Juan de Fuca strait, viz. :

Tsooquahna, No. 2 Reserve.—Two hundred and thirty-five acres. The population consists of twenty : seven men, seven women and six children.

Wyah, No. 3 Reserve.—One hundred and thirty-two acres. The population consists of sixty-three : twenty-one men, twenty-four women and eighteen children.

Clo-oose, No. 4 Reserve.—Two hundred and forty-eight acres. The population consists of eighty : twenty-three men, twenty-seven women and thirty children.

Carmanah, No. 6 Reserve.—One hundred and fifty-eight acres. The population consists of forty-six : sixteen men, eighteen women and twelve children.

Nitinaht Villages.—Each of these four villages has its own chief, but there is one head chief of the Nitinaht tribe, who resides at Wyah, and to this village nearly the whole tribe resort for the fall salmon-fishing and congregate there part of the winter. Wyah village is situated at the mouth of the Nitinaht lake, which is really an inlet with a narrow entrance from the sea ; into this inlet, which is nearly five miles long, flow the streams from which, with the Chawit river on Clo-oose reserve, these Indians get their supply of salmon.

Pacheenaht, No. 1 Reserve.—Pacheena village, Port Renfrew, situated at the mouth of the San Juan river, contains one hundred and fifty-three acres. Population consists of fifty-six : sixteen men, twenty women and twenty-children. The Pacheenahts are a distinct tribe from the Nitinahts, with their own chiefs and reserves, but are allied to them and speak the same dialect, and at sealing-time all the Nitinaht bands assemble at Pacheena village ; Port Renfrew being the only harbour on their coast.

General Remarks.

Vital Statistics.—The population of the whole agency is two thousand four hundred and fourteen: eight hundred and three men, eight hundred and seventy-four women and seven hundred and thirty-seven children. Number of births for the year, eighty; number of deaths, one hundred and thirty-seven; birth rate, thirty-three per thousand; death-rate, fifty-seven. Small changes occur in the population of the different villages from intermarriage between the different bands, and a few taking up their residence in the towns, leaving or returning to their reserves. While the number of births is three in excess of last year, the death-rate is exceptionally heavy, the deaths being fifty-seven in excess of the births. This is partly accounted for by the loss of the sealing schooner *Hatzic* which left Kyuquot last spring for the coast catch, the crew consisting of twenty-three men and one woman belonging to the Kyukaht band, and has not been seen or heard of since. This is a sad blow to this tribe, Hahkla, the head chief, and Mark, his brother, with five other chief men being on board, in fact the crew were the pick of the good men and sealers of the band, the loss leaving many widows and children destitute, who are receiving help from the department.

Health and Sanitation.—Though there has been no epidemic among the tribes except influenza, which did not affect the whole coast, there have been many deaths, principally of old age and consumption, and there are still quite a few old sick Indians to whom I have to give government aid. With the aid of the local missionaries and doctors sanitary measures have been carried out, especially in cases of sickness. Most of the villages are deserted at the present time, and when the inhabitants return from the salmon fisheries and hop-fields, will be sweet and clean.

Resources and Occupations.—There has been a decrease of the money earned by sealing, as compared with last season, of $47,000. The average catches in Behring sea last year were small, the weather was bad in the spring, one schooner, the *Fawn*, was driven on shore by the wind and lost her season; several schooners had their canoes broken on board, and a number of the Indians returned from the coast catch in debt to the schooners, while the catch by canoe from shore was a comparative failure. There are still a good many canoe-makers among these tribes, although most of the rising generation do not take to this work, the demand for canoes is mostly local.

There is an increase of $11,000 in amount earned by wages and fishing, including the making of dogfish oil and salmon-fishing on the Fraser river. Some of the Oiaht band found work at the new cable station at Bamfield creek. The Indians at Alberni find occasional work with miners, prospectors and hunters, and in logging for the two small local saw-mills; a shingle-mill was also started on the Somas river, which gave employment in cutting cedar blocks, but this is now shut down.

A few Indians with their families find employment at the Clayoquot cannery, and occasional canoeing and work with miners in Clayoquot and Nootka sounds. At Kyuquot several of the young men employ their time in the winter months in carving Indian curios, various figures and miniature totem-poles, which they barter at the local stores. The old men do most of the fishing and are out in the morning at the first peep of day. The Nitinaht Indians take halibut to Victoria, the Clayoquots occasionally send halibut by steamer for sale in Victoria, the Alberni Indians bring halibut, codfish and herrings to Alberni for sale.

The Kyukahts do a small trade with the local store in salmon for salting, the cohoes being very plentiful in their waters in the summer months. The women on this coast make quantities of baskets of various designs and sizes, the smaller ones finished with a fine grass, white and variously coloured, (which they buy from the American Indians) some of these they barter at the local stores, but the most of them are sold on the American side, where they command a ready sale. All the women, the old ones especially, spend their spare time in making mats from the inner bark of the cedar, these are in constant use by the Indians for their sleeping places, and many of the old people still sleep on the boards with their blanket with nothing under them but one of these mats, the young people, who generally possess feather beds and bedsteads, using them on their floors; the more comfortable old-fashioned bed is still manufactured from

the dried stem of the bulrush threaded together, making long mats, several folds of which with a roll at the head for a pillow make a comfortable mattress. The cedar bark mats are still used by the old-fashioned, and at feasts, to lay along the floor and put their provisions on when eating; these mats are also sold in the towns and settlements, the standard price being 25 cents each. The women are clever at making rag mats, make most of their own and children's clothes, with generally the help of a sewing machine, and knit socks for their husbands.

Buildings.—Seventeen frame houses have been built during the year, and some improvements made in painting and additions to their houses.

Education.—There are two boarding schools and five day schools which received aid from the department.

Boarding Schools.—The Presbyterian boarding school at Alberni is making good progress, seven new pupils have been admitted during the past year with an average attendance of forty, as many as the building can accommodate properly, the only drawback being the tendency to scrofula and consumption of some of the inmates, three pupils discharged during the year having died of consumption, in spite of the care taken on admission to have the applicants examined and their health certified to by a duly qualified medical practitioner. There has been no friction between the management and parents of the children in the school. The pupils are orderly, well mannered and attentive, and the home and school under good discipline, the children understand English well, and are well advanced in Scripture knowledge, and reflect great credit on Mrs. Cameron, their teacher. Teaching is carried on systematically according to the instructions conveyed by the department, the boys able to work attending to their studies in the morning and other employments in the afternoon, the girls and smaller children attending both sessions in school except those whose turn it is to help in the house work. A small brass band is under instruction, and the improvement of the grounds, garden and building testify to the industry of the boys. Mr. Motion, the principal, also exercises all possible supervision over the ex pupils of the school, most of whom are behaving in a way that does credit to the institution.

The Bishop Christie Roman Catholic boarding school at Clayoquot has the full complement of fifty pupils. On my last visit to the school I found 53 names on the register, with an average attendance of 51 $\frac{5}{8}$. This institution was carried on most successfully by Sister Mary Placide, acting principal during the absence of the Rev. Father Maurus in Europe. The teaching is carried on according to the instructions of the department, particular attention being paid to the speaking of English, and that the pupils use that language only in their intercouse with each other. The principal gave the most satisfactory account of the general behaviour and deportment of the pupils who all seem fond of school; good progress has been made in the different branches of education, writing very good. The mornings are devoted to study, the afternoons to manual labour for the boys and sewing for the girls, the boys have done a good deal of work in clearing the ground round the building, helping to make trails and a telephone line to the Opitsat village, and seem to enjoy it. The girls do the mending, make clothes for themselves, and some for their younger brothers and sisters at home, and for the younger boys, and have learned to knit and crochet nicely. The pupils are polite and well mannered and can answer a question in English intelligently and the majority of the pupils seem strong and healthy. One discharged pupil, Sennat, a good Christian lad and promising scholar, died at his father's house at Heshquiat of consumption, but he was not a strong boy when admitted to the school; another pupil is in St. Joseph's hospital for medical advice; otherwise, except small ailments, the school children have been in good health.

Day Schools.—The Ahousaht Presbyterian school is faithfully taught by Mr. Russell and Miss McNeil, who use their best influence to get a regular attendance of pupils. There are a bright and healthy lot of children in the Ahousaht tribe; the regular attendants, the boys especially, learn quickly and well: the difficulties of day school teaching lie in the movable habits of the Indians and often the indifference of the parents, who exercise a very mild supervision over their children, also the lads go sealing at an early age. This summer Mr. Russell has taken charge of seven children while their parents are

absent at the fisheries. The Presbyterian school at Ucluelet is still ably taught by Miss Armstrong, who has besides an attendance of small children a few very promising pupils and well advanced in their studies and Scripture knowledge.

Mr. McKee teaches at the Oiaht day school at Munakamis reserve in the winter months, and the reserve on Haines island in the summer, entailing two school-houses, and has a regular attendance of children who are learning the rudiments of education. This school is to receive the government grant for next year.

The Roman Catholic day school on Opitsat reserve, Clayoquot, is taught by the Rev. C. Moser, and the St. Mark's school at Kyuquot by the Rev. E. Sobry. The attendance at these schools is small, the Kyukahts showing no interest in the education of their children.

The Rev. W. Stone teaches the Nitinaht day school on Clo-oose reserve. Several families have moved from other Nitinaht reserves to this place to get the advantage of education for their children and the attendance is regular when the Indians are at home, the pupils making fair progress.

Religion.—Regular services are held in the Roman Catholic churches at St. Mark's and Kyuquot by the Rev. E. Sobry, who also pays occasional visits to the Chaicclesaht, Noochahtlaht and Ehattisaht bands.

The Rev. Father Brabant's services at Heshquiat are attended by the whole of the tribe, who are constant in their religious duties. Father Brabant also spends a few months in each year at Nootka, with the Mooachaht tribe, where he has a church and residence on the Yuquot reserve. The Rev. C. Moser has Sunday services at St. Anselm's church on the Opitsat reserve attended by the Clayoquot Indians.

The Rev. W. Stone, Methodist missionary, has services and Sunday school every Sunday and prayer meetings during the week at the school-house at Clo-oose, attended by the Nitinahts, and follows his people to the Fraser in the fishing season.

The Rev. M. Swartout, Presbyterian missionary, works in Barclay sound, dividing his time principally between the Oiaht and Ucluelet bands and visiting the various villages in that sound ; he also goes to the Fraser when the Indians congregate there for the salmon fishery. Mr. McKee with Mr. Swartout's assistance is working earnestly among the Oiaht Indians for their well-being and the furtherance of Christianity, regular Sunday services being held in the school-houses at Ucluelet, Oiaht and Ahousaht. Mr. Motion, besides his duties as principal of the Presbyterian boarding school, does a good deal of missionary work at Alberni, besides holding services for the Indians on Sundays, the sick are visited and cared for by himself and the staff of the school, those that die on the reserve receive decent burial, and are generally carried to the grave by the mission trap, and the good example set by the school and work is seen in the increased sobriety and general improvement of the Alberni Indians. Mr. Motion, by the help of kind friends, intends to build a church for the Indians on the Opitchesaht reserve this summer.

Characteristics and Progress.—The west coast Indians are good-tempered and happy in their general intercourse one with another, and kind to their wives and children except when under the influence of liquor, and seldom get into trouble with the authorities except for drunkenness. They have not earned so much money as usual during the past year, and there have not been so many potlaches given, notably at Heshquiat and Alberni. The majority of the young and middle-aged men live in comfortable frame buildings, many of them nicely furnished. Some of the Indians of the Opitchesaht band at Alberni have gardens in front of their houses well kept, surrounded by a picket fence, but the practice of so many of travelling away from their reserves for work and fishing prevents much of this work, which adds so much to the appearance and comfort of their homes, from being done.

Temperance and Morality.—I regret to report that during the past year there was an increase in the liquor trafic. A whisky sloop supplied the Ahousaht, Nootka, Ehattisaht, Noochahtlaht and Kyukaht bands with a quantity of liquor, the sloop got away, but one of the two white men on board was eventually identified and sentenced to a year's imprisonment. I can report favourably of the morality of these bands, with

the exception of the Kyukahts, where there is much room for improvement, as instanced by the paucity of children in that tribe.

I have, &c.,

HARRY GUILLOD,
Indian Agent.

BRITISH COLUMBIA,
WILLIAMS LAKE AGENCY,
CLINTON, July 20, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902.

Agency.—This agency is situated north and partly west of the Kamloops-Okanagan agency, south of the Babine agency, having the Rocky mountains as a portion of its eastern boundary and the Fraser agency for its western boundary.

This agency contains an aggregate of ninety thousand and eighty acres.

Tribe.—These Indians belong chiefly to the Salish and Tinneh peoples. A majority of the young men and women speak the English language fairly well.

Vital Statistics.—The population consists of five hundred and thirty-six men, five hundred and twenty-nine women and nine hundred and twenty young people under twenty-one years of age, making a total of one thousand nine hundred and eighty-five, an increase of fourteen, there having been eighty-three births and sixty-nine deaths during the year.

ALEXANDRIA BAND.

Reserve.—The reserve of this band is situated on a plateau on both sides of the Fraser river and about four hundred miles from its mouth. It contains an area of eighteen hundred and forty-eight and one-half acres. Its natural features are open bench-lands, good grazing lands, all requiring irrigation when cultivated. There are also excellent hay-meadows on this reserve.

Vital Statistics.—This band has a population of sixty-two : seventeen men, sixteen women and twenty-nine young people under twenty-one years of age. There were five births and three deaths.

Health and Sanitation.—The health of these Indians has been good, very little sickness amongst them. Their houses are very comfortable and kept in spendid order.

Resources and Occupations.—The chief occupation of these Indians is farming, but during the early spring months quite a number travel long distances in search of fur-bearing animals. Others find employment as farm-hands with white settlers. The women dress and manufacture deer-skins into moccasins, gloves and other wearing apparel, while in fruit season they obtain quite a revenue from the sale of berries of different kinds. They also put up large quantities of these for their own use.

Buildings, Stock and Farming Implements.—They have quite a lot of dwellings of a superior class, also good horse-stables. They have good horses, a few cattle and a good supply of farming implements.

Education.—Only a few children from this reserve have received any education. These have attended the Williams Lake industrial school.

Religion.—They are devout Roman Catholics. They have a very neat church on the reserve and lumber on the ground to build a much larger one. They take a great deal of interest in religious matters.

Characteristics and Progress.—These Indians are good workers and law-abiding, and during the year just ended made quite an improvement on their reserve.

Temperance and Morality.—These people are a moral people and with a few exceptions are temperate.

Alkali Lake Band.

Reserve.—The reserve of this band is situated on a level bench a few miles east of the Fraser river and about three hundred and twenty miles from its mouth. It contains eight thousand three hundred and forty-seven and one-half acres. There is some excellent land for farming on this reserve, but unfortunately water for irrigation is not available. A good portion is under fence and used for pasturage. There are also on this reserve very fine hay-meadows where large quantities of hay are secured each year. The natural features are bench-lands requiring irrigation, excellent hay-meadows and fair timber on the mountain slopes.

Vital Statistics.—The population of this band is one hundred and fifty-eight: thirty-seven men, forty-two women and seventy-nine young people under twenty-one years of age, there having been eleven deaths and eleven births, making no change in the population.

Health and Sanitation.—As a result of grippe, quite a number of children from this band died and also a few old people. They have good houses, which they keep clean, and also their surroundings are kept clear of refuse matter.

Resources and Occupations.—These Indians are good farmers; they raise quite a lot of grain and vegetables. Quite a number of the men find employment as farm-hands with white settlers, others as drovers with cattlemen. The women make moccasins, gloves and other articles from the tanned deer-skins. They also sell and put up for their own use large quantities of berries of all kinds.

Buildings, Stock and Farming Implements.—They have good dwellings and good horse-stables, mostly of hewn timber. They have good horses, a few cattle and pigs, and are well supplied with farming implements, wagons and sleighs.

Education.—Quite a number of children from this band attend the Williams Lake industrial school.

Religion.—These Indians are all Roman Catholics. They have a good church on the reserve, at which they attend morning and evening. A missionary makes occasional visits amongst them.

Characteristics and Progress.—They are good workers, industrious and law-abiding, and making good progress.

Temperance and Morality.—They are a moral people, and for the last few years I have not heard of a case of intemperance on the reserve.

Anaham Band.

Reserve.—The reserve of this band is situated in a beautiful valley near the Chilcotin river and about sixty miles from its mouth. It has an area of nine thousand nine hundred and twenty-two acres. The natural features are open bench-lands requiring irrigation, water for which is in abundance and all secured for this band, excellent hay meadows and fair timber on the mountain slopes.

Vital Statistics.—The population of this band consists of sixty-four men, fifty-eight women and ninety-six young people under twenty-one years of age, making a total of two hundred and eighteen, an increase of two during the year, there having been four births and two deaths.

Health and Sanitation.—The health of these Indians has been good, very little sickness of any kind amongst them. Their houses and surroundings are kept clean, and the houses well ventilated.

Resources and Occupations.—These Indians farm considerably, raise cattle, horses and pigs, and when not busy at home, take their teams and wagons for freight to the nearest railway station, a distance of two hundred miles. Quite a number are employed as farm-hands and drovers with cattlemen. They are expert riders.

Buildings, Stock and Farming Implements.—They have fairly good dwellings, good horse-stables, plenty of horses and quite a number of cattle and pigs. They are well supplied with farming implements of all kinds, also with wagons, harness and sleighs.

Education.—None of the children of this band have received any education, as there are no schools within seventy miles of the reserve.

Religion.—These Indians are all Roman Catholics. They have a small church on the reserve and are frequently visited by a missionary.

Characteristics and Progress.—They are industrious and hard-working, steadily improving in their way of farming and getting better off every year.

Temperance and Morality.—They are a moral people and I seldom hear of a case of intemperance amongst them.

Anderson Lake Band.

Reserve.—This reserve is situated at the upper end of Anderson lake, being the most southerly portion of the agency. It has an area of five hundred and four acres. The natural features are bottom-lands, good hay-meadows and surrounded by good grazing lands and timber of excellent quality.

Vital Statistics.—The population consists of nineteen men, seventeen women and thirty young people under twenty-one years of age, making a total of sixty-six, an increase of one during the year, there having been two births and one death.

Health and Sanitation.—The health of these Indians has been good. Premises are kept clean and in a sanitary condition.

Resources and Occupations.—These Indians do a little farming, have good vegetable gardens, also fruit gardens, some of the men are employed on farms; some go to the coast during salmon-canning season; some engage in gold-mining, and others cutting saw-logs on Crown lands, which find a ready sale at the saw-mills. The women are expert basket-makers.

Buildings, Stock and Farming Implements.—These Indians have good dwellings, good horse-stables, quite a number of horses, cattle and pigs, and a good supply of farming implements.

Education.—None of the children of this band have ever received any education.

Religion.—These Indians are all Roman Catholics. They have a small church on the reserve and are frequently visited by a missionary. They take much interest in religion.

Characteristics and Progress.—They are good workers, law-abiding and earn a comfortable living.

Temperance and Morality.—They are a temperate and moral people.

Bridge River Band.

Reserves.—The reserves laid out for this band are along the left banks of the Fraser and Bridge rivers. The lands fit for cultivation are in small patches, but the Indians manage to raise good crops of grain and vegetables. There are nine thousand seven hundred and sixty-one acres reserved for this band. The natural features are bench-lands following the rivers and all requiring irrigation, good grazing lands on the slopes of the mountains.

Vital Statistics.—This band has a population of one hundred and eight, consisting of twenty-nine men, twenty-eight women and fifty-one young people under twenty-one years of age. During the year there was an increase of three, there having been four births and one death.

Health and Sanitation.—This reserve was free from any serious sickness during the year. The buildings are kept clean and all refuse matter is destroyed.

Resources and Occupations.—These Indians are very industrious, raising good crops of grain and vegetables. They are employed in many ways, as farm-hands, freighters, packers, gold-mining, guides to tourists and hunters. The women make baskets, moccasins, gloves, and earn considerable money from the sale of small fruit, which is plentiful near the reserve.

Buildings, Stock and Farming Implements.—They have comfortable dwellings, good horse-stables, good horses, a few cattle and pigs, and are well supplied with farming implements, wagons, sleighs and harness.

Religion.—They all belong to the Roman Catholic Church and have a small church on the reserve.

Education.—None of the children of this band have ever received any education.

Characteristics and Progress.—They are industrious and law-abiding, making steady progress. Their houses are of a much better class and they are improving very much in farming.

Temperance and Morality.—They are a temperate and moral people.

Canoe Creek Band.

Reserve.—The reserve of this band is situated on a small stream, called Canoe creek, which empties into the Fraser river about three hundred miles from its mouth. These Indians have good agricultural lands, but owing to the scarcity of water for irrigation, only a small portion is cultivated. They have an area of sixteen thousand one hundred and twenty-nine acres. The natural features are open bench-lands, good grazing lands and fair timber on the mountain slopes.

Vital Statistics.—The population consists of thirty-seven men, forty-seven women and seventy-three young people under twenty-one years of age, making a total of one hundred and fifty-seven. There were seven births and four deaths, making an increase of three during the year.

Health and Sanitation.—The health of these Indians has been good. Their houses are kept clean and their surroundings in a sanitary condition.

Resources and Occupations.—These Indians engage in farming, working as farm hands and cowboys with white settlers, and during the winter months some go long distances hunting fur-bearing animals.

Buildings, Stock and Farming Implements.—They have fairly good dwellings and horse-stables, a great number of horses, some cattle and pigs and a good supply of wagons, sleighs and farming implements.

Education.—A number of children of this band are being educated at the Williams Lake industrial school.

Religion.—All these Indians are Roman Catholics. They have a very neat church on the reserve.

Characteristics and Progress.—They are industrious and law-abiding.

Temperance and Morality.—They are moral, but one or two of this band occasionally get intoxicated.

Cayoosh Creek Band No. 1.

Reserve.—This reserve is situated at the month of Cayoosh creek where it joins the Fraser river about two hundred and twenty miles from its mouth. It contains

three hundred and sixty-seven acres. The natural features are bench lands following the river, and good grazing lands along the mountain sides.

Vital Statistics.—The population consists of nine men, six women and nineteen young people under twenty-one years of age, making a total of thirty-four. There were no deaths nor births during the year.

Health and Sanitation.—The health of these Indians has been good. There was very little sickness amongst them. Sanitary regulations are well observed.

Resources and Occupations.—Farming, fishing, hunting, gold-mining, and working as labourers with white settlers, are the principal occupations.

Buildings, Stock and Farming Implements.—These Indians have good comfortable dwellings and good horse-stables. They have a few horses, wagons, sleighs, and a few farming implements.

Education.—A few of the children of this band have been attending the public school during the last few months.

Religion.—These Indians are all Roman Catholics.

Characteristics and Progress.—They are industrious and law-abiding. They are not making much progress.

Temperance and Morality.—They are a temperate and moral people.

Cayoosh Creek Band No. 2.

Reserve.—This reserve is situated four miles from Cayoosh creek No. 1 reserve, on a bench above the Fraser river. It contains seven hundred and eighty-five acres. The natural features are open bench-lands requiring irrigation. There is good grazing land and some fair timber on the mountain sides.

Vital Statistics.—The population consists of five men, four women and six children, making a total of fifteen. During the year there were no births nor deaths.

Health and Sanitation.—The health of these Indians has been good The houses are kept clean and comfortable.

Resources and Occupations.—Farming, fishing, hunting and gold-mining are their principal occupations. The women earn a good deal from the sale of gloves, moccasins and berries.

Buildings, Stock and Farming Implements.—They have comfortable dwellings, good horse stables, a few horses and cattle, and a good supply of farming implements.

Education.—A few children of this band have been going to the public school for the last few months.

Religion.—All these Indians belong to the Anglican Church. They have no church on the reserve, but attend worship at Lillooet, a distance of six miles from the reserve.

Temperance and Morality.—They are a temperate and moral people.

Clinton Band.

Reserve.—This reserve is situated in the Clinton valley and contains ten hundred and seventy-three acres. The natural features are small flats and meadow-lands along the banks of a small stream running through the reserve, and timbered mountain slopes afford good grazing.

Vital Statistics.—The population consists of eleven men, twelve women and twenty-three young people under twenty-one years of age, making a total of forty-six, being an increase of two, there having been four births and two deaths during the year.

Health.—There was not much sickness of any kind amongst the members of this band.

Resources and Occupations.—They raise grain and vegetables, also hay, work as labourers with white settlers, are good hunters, and during the winter season supply the

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Old Woman of Kispaian, Upper Skeena, Babine Agency, (B.C.) Spinning Wool of Mountain Goat on her thigh.

village of Clinton with most of the cord-wood used. The women make and sell moccasins, gloves, also sell berries and are employed in white families as washerwomen.

Buildings, Stock and Farming Implements.—They have very fair buildings, both dwellings and horse-stables; good horses, a few head of cattle, good farming implements, wagons, sleighs and harness.

Education.—None of the children of this band attend school.

Religion.—These Indians are all Roman Catholics. They have a neat church on the reserve where daily service is held. A missionary visits them regularly.

Characteristics and Progress.—They are industrious, law-abiding and honest, and earn a comfortable living.

Temperance and Morality.—They are a temperate and moral people.

Fountain Band.

Reserve.—This reserve is situated on terraces on the east bank of the Fraser river and two hundred and fifty miles from its mouth. It contains an area of one thousand eight hundred and sixty-four acres. The natural features are open bench-lands requiring irrigation, good grazing lands on the hills and mountain sides.

Vital Statistics.—The population consists of fifty-one men, fifty-seven women and ninety-three young people under twenty-one years of age, making a total of two hundred and one, being a decrease of one, there having been nine deaths and eight births.

Health and Sanitation.—Quite a number of the deaths at this reserve, mostly from grippe, were amongst the young children.

The houses are very comfortable and kept clean and the yards kept clear of refuse matter.

Resources and Occupations.—The chief occupations of these Indians are farming, gold-mining on the Fraser river, teaming and as farm hands with white settlers.

Buildings, Stock and Farming Implements.—They are getting a much better class of dwellings, good horse-stables, good horses, and a few cattle and pigs. They have wagons and sleighs, and are well supplied with farming implements of all kinds.

Education.—None of the children of this band have received any education.

Religion.—All these Indians are Roman Catholics. They have one of the finest churches in the agency on the reserve and a well trained brass band. They receive regular visits from a missionary.

Characteristics and Progress.—They are very industrious, law-abiding, and intelligent, and are making good progress in cultivating their lands.

Temperance and Morality.—On the whole they are moral and temperate; occasionally some of the men get intoxicated.

Dog Creek Band.

Reserve.—This reserve is situated on a stream of that name which flows into the Fraser river about three miles from the village, and contains an area of thirteen hundred and seventy-one and one-half acres. The natural features are open bench-lands requiring irrigation and good grazing lands on the hills and mountain sides.

Vital Statistics.—The population consists of three men, three women and ten young people under twenty-one years of age, making a total of sixteen, there having been one birth and no deaths.

Health and Sanitation.—There was no sickness at this reserve. Everything is kept clean and in a good sanitary condition.

Resources and Occupations.—Farming, working as labourers with white settlers, hunting and fishing, are the principal occupations of these men.

Buildings, Stock and Farming Implements.—They have good dwellings and horse stables, a few good horses, cattle and pigs, and a good supply of farming implements.

Education.—A few children from this band attend the Williams Lake industrial school.

Religion—These Indians are all Roman Catholics, but have no church.

Characteristics and Progress.—They are good workers, law-abiding and honest, and are making good progress on the reserve by fencing and cultivation.

Temperance and Morality.—They are temperate and moral.

High Bar Band.

Reserve.—This reserve is situated on the east bank of the Fraser river about three hundred miles from its mouth, and contains two thousand nine hundred and twenty-four acres. The natural features are open bench-lands requiring irrigation, but owing to the scarcity of water for irrigation, very little of the land is cultivated. On the hills and mountain sides there are good grazing lands.

Vital Statistics.—The population consists of thirteen men, eleven women and twenty-seven young people under twenty-one years of age, making a total of fifty-one. During the year there were two deaths and three births.

Health and Sanitation.—The health of these Indians has been good. Their houses are kept clean and sanitary regulations are well observed.

Resources and Occupations.—These Indians engage in farming. In addition to vegetables they raise a quantity of small fruit, such as currants, raspberries and gooseberries, also melons, pumpkins and squash, which are brought to the village of Clinton and readily disposed of. They also fish, hunt and act as guides to hunters and tourists.

Buildings, Stock and Farming Implements.—They have fair dwellings, horse-stables, horses, cattle and pigs and some farming implements.

Religion.—They belong to the Roman Catholic Church. They are very religious. They have a small church on the reserve.

Education.—None of the children have received any education.

Characteristics and Progress.—These Indians are industrious and law-abiding.

Temperance and Morality.—They are a temperate and moral people.

Kanim Lake Band.

Reserve.—This reserve is situated in the Bridge Creek valley, twenty miles to the east of the Cariboo wagon road and contains four thousand five hundred and sixty acres. The natural features are bench and meadow lands along the river bottoms, good grazing lands, the rest of the reserve covered with good timber.

Vital Statistics.—The population consists of twenty-eight men, twenty-six women and thirty-three young people under twenty-one years of age, makings a total of eighty-seven, a decrease of five during the year, there having been six deaths and only one birth.

Health.—There have been no infectious or contagious diseases at this reserve, the deaths being mostly from grippe and lung troubles.

Buildings, Stock and Farming Implements.—They have good dwellings and horse stables, good horses, cattle and pigs, and are well supplied with farming implements of all kinds.

Religion.—They are all Roman Catholics. They have a very handsome church on the reserve, and take great interest in religion.

Education.—A number of children from this band attend the Williams Lake industrial school.

Characteristics and Progress.—These Indians are industrious, law-abiding and are making steady progress on the reserve.

Resources and Occupations.—Farming, stock-raising, trapping, hunting and fishing are the principal pursuits.

Temperance and Morality.—These Indians are a temperate and moral people.

Lillooet Band No. 1.

Reserve.—A portion of this reserve is situated on the west side of the Fraser river near the village of Lillooet, and the remainder six miles below on the east side of the Fraser river. It contains one thousand four hundred and eighty and one-half acres. Its natural features are good bench-lands, a good portion of which would be suitable for cultivation, could water for irrigation be obtained. There are good grazing and fair timber lands.

Vital Statistics.—The population consists of twenty-three men, twenty women and twenty-five young people under twenty-one years of age, making a total of sixty-eight. There were seven deaths and only one birth during the year, making a decrease of six.

Health and Sanitation.—There were no contagious diseases at this reserve; most of the deaths were those of very old people. Their houses are clean and comfortable and sanitary regulations well observed.

Resources and Occupations.—They find employment in farming, gold-mining, hunting, fishing, working as labourers, freighting (owning their own teams and wagons) supplying fire-wood for the village of Lillooet, and acting as guides to tourists and hunters in search of large game. Their women contribute by the sale of gloves, moccasins, berries and baskets.

Buildings, Stock and Farming Implements.—They have good dwellings and horse stables. They have some horses, a few head of cattle and pigs. They are well supplied with farming implements, wagons, sleighs, harness and saddles.

Education.—A few of the children have attended the Lillooet public school.

Religion.—These Indians are all Roman Catholics. They have a small church on the reserve and are now building a much larger and more modern one. There is a missionary stationed amongst them.

Characteristics and Progress.—They are industrious and law-abiding, and the majority of them earn a comfortable living.

Temperance and Morality.—The Indians of this band are generally temperate and moral, but occasionally give the authorities trouble by getting intoxicants from the lower class of whites, Chinese and half-breeds.

Lillooet Band No. 2.

This reserve is situated on the west bank of the Fraser river and about twelve miles from the village of Lillooet. It contains five hundred and forty-four acres. Its natural features are open bench-lands suitable for cultivation, all requiring irrigation, also fair timber-lands.

This band consists of only four persons,—two men, one woman and a boy.

They make a good living in a variety of ways.

Pavilion Band.

Reserve.—This reserve is situated both on the east and west sides of the Fraser river, and contains an area of four thousand one hundred and thirty-six acres. Its natural features are open bench-lands, all requiring irrigation, good grazing and fair timber lands.

Vital Statistics.—The population consists of seventeen men, twenty women and thirty-one young people under twenty-one years of age, making a total of sixty-eight. There were no births nor deaths during the year.

Health and Sanitation.—The health of these Indians has been good, their houses and surroundings kept in good order.

Resources and Occupations.—Farming, hunting, fishing, gold-mining and working for white settlers are the principal occupations of this band.

Buildings, Stock and Farming Implements.—These Indians have good horses, a few head of cattle and pigs; wagons, sleighs, harness, saddles, and a good supply of farming implements. They have fairly good buildings.

Education.—None of the children of this band have received any education.

Religion.—They are all Roman Catholics. They have a small church on the reserve and take great interest in religion.

Characteristics and Progress.—They are good workers, law-abiding and making steady improvements on the reserve.

Temperance and Morality.—They are temperate and moral.

Quesnel Band.

Reserve.—This reserve is situated on the east bank of the Fraser river and four hundred and fifty miles from its mouth and three miles from the village of Quesnel. It has an area of one thousand six hundred and eighty-seven and one-half acres.

Its natural features are flats along the Fraser river covered with brush, and on the upper benches covered with heavy timber.

Vital Statistics.—The population consists of twenty-one men, seventeen women and thirty-one young people under twenty-one years of age, making a total of sixty-nine. During the year there were nine births and seven deaths. For some reason these Indians are not able to raise many of their children, which accounts for the large number of deaths yearly.

Health.—The general health of these Indians has been good.

Resources and Occupations.—Their chief occupations are farming, boating, hunting, fishing, trapping and as farm-hands with white settlers.

Buildings, Stock and Farming Implements.—They have fair dwellings and horse-stables, some horses, a number of farming implements, also wagons and sleighs.

Education.—None of these children have ever received any education.

Religion.—These Indians are all Roman Catholics. They have a small church on the reserve and take great interest in religion.

Characteristics and Progress.—They are law-abiding and are making much better progress in cultivating their reserves.

Temperance and Morality.—As a rule they are temperate and moral.

Seton Lake or Mission Band No. 1.

Reserve.—This reserve is situated on the west side of Seton lake and contains an area of two thousand and eighty-five acres. Its natural features consist of open bench-lands requiring irrigation, timbered mountain slopes and poor grazing lands.

Vital Statistics.—The population consists of twenty-one men, thirteen women and thirty-eight young people under twenty-one years of age, making a total of seventy-two, an increase of one, there having been five births and four deaths during the year.

Health and Sanitation.—The health of these Indians has been good. Most of the houses are kept clean and sanitary regulations are attended to.

Resources and Occupations.—They engage in farming and gardening, packing with horses from the reserve to the various gold mines on Bridge river, as labourers at various occupations and in hunting, fishing, and gold-mining.

Buildings, Stock and Farming Implements.—They have fairly good dwellings and horse-stables; good horses, a few head of cattle and pigs; and farming implements sufficient for their wants.

Education.—None of the children of this band have received any education.

Religion.—They are all Roman Catholics and have a small church on the reserve.

Characteristics and Progress.—They are industrious and law-abiding. Owing to the scarcity of water for irrigation, they are unable to cultivate much land and are not making much progress.

Temperance and Morality.—They are temperate and moral.

Seton Lake or Enias Band No. 2.

This reserve is situated on the west side of Seton lake and about six miles from its outlet. It has an area of one hundred and eighty-eight acres. Its natural features are bench-lands requiring irrigation and fair timber on the mountain slopes.

There is only one man living on this reserve, his wife having died during the year He makes a living by gardening, hunting and fishing.

Seton Lake or Slosh Band No. 5.

Reserve.—This reserve is situated at the head of Seton lake and contains eighty acres. Its natural features are bottom and bench-lands surrounded by high mountains heavily timbered.

Vital Statistics.—The population consists of nine men, nine women and sixteen young people under twenty-one years of age, making a total of thirty-four. There was one birth and one death during the year.

Resources and Occupations.—They engage in farming, hunting, fishing and packing with horses to the Bridge river gold mines.

Buildings, Stock and Farming Implements.—They have fair dwellings and horse stables; good horses, a few head of cattle and pigs; wagons, sleighs, harness, saddles; and a good supply of farming implements.

Education.—No children from this band have received any education.

Religion.—These Indians are all Roman Catholics. They have a small church on the reserve where daily service is held.

Characteristics and Progress.—They are good workers, making steady improvement on their reserve.

Temperance and Morality.—They are temperate and moral.

Seton Lake or Necait Band No. 6.

Reserve.—This reserve is situated at the foot of Anderson lake, and contains eighty-four acres. Its natural features consist of bench and bottom lands surrounded by high mountains heavily timbered. There are no grazing lands.

Vital Statistics.—The population consists of fifteen men, fourteen women and twenty-three young people under twenty-one years of age, making a total of fifty-two. There was one death and no births during the year.

Health.—The health of this band has been good.

Resources and Occupations.—These Indians engage in farming, gardening, freighting in boats and canoes across Anderson lake, hunting, fishing, trapping, and as labourers at various occupations.

Buildings, Stock and Farming Implements.—They have good dwellings and horse stables; a few good horses; sleighs and harness; and a fair supply of farming implements.

Characteristics and Progress.—They are law-abiding and industrious. Their reserve is a small one and a good portion of it is heavily timbered and hard to clear so that it is difficult to make much progress.

Education.—None of the children of this band have ever received any education.

Religion.—These Indians are all Roman Catholics. A missionary pays them regular visits, when services are held in a small church on the reserve.

Temperance and Morality.—They are temperate and moral.

Soda Creek Band.

Reserve.—A portion of this reserve is situated on the east side of the Fraser river, and the remainder along the Cariboo wagon road about fourteen miles from the former. The reserve has an area of five thousand two hundred and ten acres. Its natural features are, in the portion along the Fraser river bench-lands, while that along the Cariboo road is meadow-land; good grazing at both places and fairly good timber.

Vital Statistics.—The population consists of twenty-two men, twenty-six women and thirty-three young people under twenty-one years of age, making a total of eighty-one. There were five births and four deaths during the year.

Health and Sanitation.—The general health of this band has been good, no contagious diseases occurring amongst them. Their dwellings and surrounding are kept clean and in a sanitary condition.

Resources and Occupations.—Their principal occupations are farming and teaming, working as farm-hands with white settlers, hunting, fishing and trapping. The women manufacture and sell moccasins and gloves, and also earn a good deal of money from the sale of berries.

Buildings, Stock and Farming Implements.—These Indians have very good dwellings and horse-stables; a few good horses, cattle and pigs; wagons, sleighs, harness, saddles; and a good supply of farming implements.

Characteristics and Progress.—They are industrious and hard workers and making steady improvement on the reserve.

Education.—A few of the children of this band attend the Williams Lake industrial school.

Religion.—These Indians are all Roman Catholics and have a very nice church on the reserve, where they are occasionally visited by a missionary. They take great interest in religion.

Temperance and Morality.—They are a temperate and moral people.

Stone Band.

Reserve.—The reserve of this band is situated on the west bank of the Chilcotin river, and contains an area of four thousand two hundred and twenty-five acres. Its natural features are bench-lands requiring irrigation, good grazing lands and hay meadows.

Vital Statistics.—The population consists of twenty-eight men, twenty-eight women and fifty young people under twenty-one years of age, making a total of one hundred and six; there were no births nor deaths during the year.

Health and Sanitation.—There has been no sickness amongst these Indians. They keep their dwellings and surroundings in a good sanitary condition.

Resources and Occupations.—They engage in farming, hunting, fishing, trapping, and working as labourers with white settlers as farm-hands or cowboys.

Buildings, Stock and Farming Implements.—They have good dwellings, good horses, sleighs, harness, and a fair supply of farming implements.

Education.—None of the children of this band have ever received any education.

Religion.—These Indians are all Roman Catholics and have a small church on the reserve.

Characteristics and Progress.—They are industrious and are taking much more interest in cultivating their lands than formerly when depending almost entirely on hunting and fishing for their living.

Toosey Band.

Reserve.—This reserve is situated on Riskie creek, a small stream that flows into the Chilcotin river. It has an area of six thousand three hundred and fifty-two and one-quarter acres. Its natural features are bench-lands requiring irrigation, good grazing lands and hay-meadows.

Vital Statistics.—The population consists of fifteen men, eleven women and thirty-seven young people under twenty-one years of age, making a total of sixty-three. During the year there were four births and no deaths.

Health and Sanitation.—The health of these Indians has been good and their premises kept in good order.

Resources and Occupations.—They engage in farming, hunting, fishing, trapping, working as labourers with white settlers and cowboys with stockmen.

Buildings, Stock and Farming Implements.—They have good dwellings, horses, cattle, pigs, wagons, sleighs, and a good supply of farming implements.

Education.—No children of this band have received any education.

Religion.—These Indians are all Roman Catholics. They have a small church on the reserve.

Characteristics and Progress.—They are industrious and law-abiding, and making good progress on their reserve.

Temperance and Morality.—They are temperate and moral.

Williams Lake Band.

Reserve.—This reserve is situated in the Williams Lake valley. It contains an area of four thousand six hundred and thirteen and one-quarter acres. Its natural features consist of good bottom-lands, excellent hay-meadows, surrounded by good grazing lands.

Vital Statistics.—The population consists of forty-five men, forty-five women and fifty-eight young people under twenty-one years of age, making a total of one hundred and forty-eight. During the year there were eight births and three deaths, making an increase of five.

Health and Sanitation.—There were no contagious diseases at this reserve during the year, most of the sickness being grippe and pneumonia. The houses are kept clean and are comfortable.

Resources and Occupations.—These Indians engage in farming, teaming, working as labourers with white settlers at various occupations, hunting, fishing and trapping.

Buildings, Stock and Farming Implements.—They have good dwellings and horse-stables, horses, cattle, pigs, wagons, sleighs, harness, and are well supplied with farming implements.

Education.—A number of children from this band attend the Williams Lake industrial school.

Religion.—The members of this band are all Roman Catholics and have a neat church on the reserve.

Characteristics and Progress.—They are industrious and law-abiding, and making steady improvement on the reserve.

Temperance and Morality.—On the whole they are moral and temperate.

General Remarks.

The Indians of this agency are steadily improving, particularly in the class of dwellings erected, and the interest they are taking in the cultivation of their lands. Most of their dwellings are kept clean and orderly. Heating and cooking stoves are to be found in all their dwellings. Although the industrial school at Williams Lake has not been operated to its full capacity, the pupils who have attended have made good progress both in their studies and trades. The principal and teachers of this institution are unceasing in their efforts to perform the duties they have undertaken, which at times are very trying.

I have, &c.,

E. BELL,
Indian Agent.

British Columbia,
Indian Superintendent's Office,
Victoria, September 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to forward my annual report upon Indian affairs in connection with the British Columbia superintendency for the year ended June 30, 1902. As they came to hand the respective reports received from the Indian agents, as well as the statistical statements, were duly forwarded to Ottawa. In this connection I regret being obliged to state that, as usual, in nearly every instance, the latter were more or less inaccurate, delaying the transmission of these returns to their destination, and entailing upon this office much labour that should not have been necessary considering the full and repeated instructions received by the agents as to what is required in that respect.

The following summary under the different headings formulated by the department will, I trust, be interesting and satisfactory, as evidencing a steady advancement towards substantial progress by the native inhabitants of this province.

Population.—The census returns received show, on the whole, a slight increase; this is all the more gratifying when it is considered that the death-rate in the West Coast agency was unusually heavy, due, in a measure, to the loss of the sealing schooner *Hatzic* which sailed last spring from the Kyuquot village, having on board, besides the white crew, twenty-three Indians and one kloochman, all of whom are supposed to have been drowned during the terrible gales then raging along that coast. The loss of these native people was rendered all the more deplorable owing to the fact that the chief, an excellent man, and many of the influential men of the tribe were among the hunters engaged on the ill-fated schooner.

Health and Sanitation.—Although in three of the agencies there have been outbreaks of small-pox, I am happy in being able to report the general health as good. The agencies in which that loathsome and too often fatal disease appeared are the Fraser the Kootenay, and the Northwest Coast. Fortunately it was of the mildest type

and owing to the unremitting and engeertic efforts made in that behalf by the Indian agents, the missionaries, and the medical men employed by the department, the incipient epidemic was in every instance promptly and effectively stamped out with but very few fatal results, those succumbing being old and feeble when attacked. During the outbreak at Vancouver the patients were treated at the city small-pox hospital, the department paying all charges, which materially facilitated the carrying out of the stringent and effective measures adopted by the doctor in charge for the cure of those afflicted as well as for the prevention of the spread of the disease. In the ordinary course of such events there were inevitably deaths from other causes throughout the superintendency, following consumption, pneumonia, and grippe; the victims being mostly old and weakly people, and young children. A very satisfactory advance is each year apparent in the measures adopted by the Indians under the instructions of the agents and others to insure healthful sanitary conditions in their houses and surroundings; the experience of late years cannot but bring home to many of them the efficacy of such provision and foresight, inasmuch as owing to these precautions the enjoyment of life is enhanced and an immunity from sickness and disease to a great extent insured.

Vaccination has been widely and generally carried out, unfortunately, in some cases, to the discomfort, loss, and real suffering, of those operated upon. Owing to the system of the Indian being more or less tainted with scrofula, and doubtless from other causes, repulsive and malignant sores were produced rendering numbers of the poor creatures unfit for work for lengthened periods, and necessitating the placing in hospital of others, so virulent was the nature of the disorder engendered.

The most beneficial results continue to be the outcome of the care and medical treatment available in the hospitals subsidized by the department. In these charitable and curative establishments whites and Indians alike are taken in and ministered to with skill and kindness, eliciting, naturally, the gratitude not only of those who have directly benefited thereby, but of all in the respective localities who in case of need feel certain of relief.

Resources and Occupations.—Coming under the scope of the above may be mentioned farming, gardening and working as farm-hands on the ranches of their white neighbours; stock-raising and employment as cowboys on many of the cattle ranges; logging on their own account and working in saw-mills; employment as trimmers on ships loading coal, for which they are paid from $3 to $5 a day; loading lumber on ships for export, at which they earn equally high wages; as fishermen, and at other employments around the canneries; fur-sealing on their own account, and as hunters on schooners owned by white men; curing salmon, halibut and other fish products for sale and for home consumption; as section men on railways and labourers on provincial roads; as deck-hands on steamers plying between different ports; as boatmen, packers, freighters guides to hunters, miners and others; mining on their own account and for hire; hop picking; dairying on their own reserves; catching fish and procuring game in season, which they sell at different cities and towns; fruit-culture; poultry-raising; making curios (mostly during the winter season), copied from ancient native models, for which they find a ready sale to tourists; building fishing-boats and other kinds, also canoes for their own requirements and for sale; manufacturing dogfish and oulachon oil; working as carpenters, and in various capacities, chiefly in new towns springing up all over the province; cutting cord-wood for sale to canneries and to steamboat-owners on Crown lands; acting as interpreters; as lighthouse-keepers, and engaging from time to time in all such other desultory occupations wherefrom they expect to derive sufficient remuneration to recompense them for their labour. The Indian women, it may be remarked, are also money-earners to no inconsiderable extent, during the canning season and at the hop-fields they find profitable employment; they engage extensively in the manufacture of baskets, which they dispose of profitably to tourists and others; they cure and dress deer and cariboo skins, out of which are made gloves and moccasins, and they frequently find a market for the dressed skins intact, they being useful for many purposes; mats from the inner bark of the cedar and of rags are also made, some of which are of an attractive and superior quality; they make their own and their children's clothing, being much assisted in the latter by sewing and knitting machines; they also

gather large quantities of berries, which in some cases they sell among the white people, a major portion is, however, dried for winter use; in doing chores and laundry work for their white neighbours they also find considerable employment.

Buildings.—With the exception of the Kamloops-Okanagon, and the Kwawkewlth agencies, where but little progress is to be seen in that direction, each year shows a vast improvement in the class of residences, as well as farm-buildings, outhouses, &c. Many of their dwellings are large two-story edifices, while the numerous cottages are substantial and more or less ornate in their construction, many of them being nicely painted and comfortably furnished, it not being uncommon to find flower gardens tastefully fenced, and, where there is no garden, potted flowers in the windows or on the verandahs. In this connection I may remark that the Indians are, fortunately for themselves, beginning to profit by the advice so often given them to the effect that they should not spend their earnings in useless purchases, and are by degrees learning to keep their money for such useful purposes as those above mentioned, instead of spending it for worthless trash, as in the past was too often the case, when they, like children, could not forego the desire to possess what at the moment attracted the eye, irrespective of its utility.

Stock.—Where grazing lands and hay-meadows are available, the cattle and horses owned by the Indians are steadily increasing, large sums being paid from time to time for imported stock of a superior breed. In many localities the native ponies are being sold off and cattle purchased in their stead. The bull presented to the Nass river Indians by the department has produced the most excellent results noticeable in last spring's calves, and as it is only recently that the Indians have gone in for stock-raising, this is a great encouragement to them. Sheep and pigs are also becoming more general among them, and, on account of their being easily managed and producing good returns, will be extensively raised in the future.

Farming Implements.—As the advance made by the Indians in agricultural pursuits progresses, so does the necessity and desire for improved machinery and farming implements arise. Mowers and reapers, threshing-machines and all implements of an advanced order, are by degrees being acquired, purchased from the savings made from their earnings in the many lucrative occupations in which they engage. When they have attended to their own crops, it is becoming quite general among many of the bands to travel with their threshing-machines from the farm of one white settler to another, till the harvesting is over. They earn considerable money, while so engaged, as the white farmers, being most desirous of their assistance, pay well for the service rendered.

Education.—Full and interesting reports from the respective principals in charge of the industrial and boarding schools subsidized by the department, and operated under the auspices of different religious denominations, have been forwarded and are well worthy of notice, indicating, as they do, the material benefits derived by the rising native generation from the careful training bestowed upon them in these establishments.

The different managements in charge are deserving of praise for their devotion to the work in hand, and for their patient and untiring efforts in devoting their best energies to the advancement and welfare of their pupils.

In my visitations throughout the superintendency I have been pleased to notice in many instances the substantial results arising from the education and training thus afforded.

Stores are springing up on many of the Indian reserves operated entirely by the Indians, the clerks being young men educated at one or other of the department's schools. Young native women trained at these institutions go out to service as nursemaids and general house servants, and give every satisfaction to their employers. In their own houses it is noticeable that those who have had the advantage of such training are much more comfortably off, and approach closely the standard regulating the domestic arrangements obtaining in the homes of respectable white people of the industrious class. In the management of their gardens, farms and other industrious pursuits, a method and thrift, unobserved by the older Indians, is apparent. The superstitious beliefs as well as many of the old-fashioned customs which so much impeded, and still impede, the advance of their forebears, are dying out, and in another decade, I

feel assured, will be looked upon as things of the past. Among the younger Indians English is now freely spoken, and judging from their actions, it would seem that their greatest ambition is to become all the same as a white man. When these schools were first started, the Indians looked upon them with much suspicion, in an undefined way, fearing they really knew not what. This antagonistic feeling was particularly noticeable in the old, in whose nature was engrained a sort of veneration for and superstitious belief in their old customs and more or less savage mode of life in the checkered course of which they were never separated from their offspring. Much patience and tact was therefore required to reconcile them to the parting necessary upon the admission of the children into the comfortable and educational homes provided for them. At the present time so great has been the change for the better brought about by the improvement, morally, physically and intellectually of the young people who spent, profitably, years in these institutions, that the applications for admission into one or other of these schools are far in excess of the accommodation available, and the Indians are constantly asking for more schools.

The day schools are as successful as they well can be, when it is considered that very many of the Indians in their struggle for existence have periodically to move from place to place in pursuit of work to enable them to maintain themselves and families. On these nomadic excursions they are obliged to take their families with them, and frequently their domestic animals, consisting of dogs and cats, as well; even ducks, geese and chickens are sometimes to be seen in the canoe, huddled up among the native impedimenta. Under such conditions the attendance of the children must be irregular and the result of such desultory instruction as they can get not as affective as it would be if without interruption. Some of the missionaries and teachers in charge of these schools, however, follow the Indians to the canneries and there continue to instruct the little ones.

The number of schools in the superintendency are enumerated respectively in the different agents' reports.

Religion.—Under this head I am happy in being able to report that the most satisfactory conditions prevail. Religious services and observances continue to be practised with the most commendable zeal by those converted from heathenism to a belief in the Christian faith; indeed, the devotion of many of these simple people is most touching, and affords an example of child-like trust in, and faithful observance of, what they profess that might profitably be followed by many of their more civilized and pretentious white brethren.

The number of churches is ever on the increase, and in decorating and making attractive these places of worship such of the Indians as have the means contribute freely and ungrudgingly.

The pagans at present are few and are yearly growing less under the gentle pressure being brought to bear upon their unbelief by the indefatigable exertions of the missionaries who, no matter how uncongenial the elements that surround them and so often impede their work may be, seem never to weary in well-doing.

Characteristics and Progress.—Taking them altogether, the British Columbia Indians are remarkably industrious, enterprising, self-reliant, honest, sober and law-abiding. They are good neighbours, and friendly with the whites and with each other. In my visitations throughout the superintendency it has afforded me much gratification to notice in places the comfortable homes of the Indians surrounded in many instances by every reasonable indication of an abundance of such necessaries as are considered ample to meet the daily wants of well-to-do white people. Each year adds to the area of land under cultivation, and rapid advances have been made, as a general thing, in the miles of fencing constructed.

As an instance of what can be done by an Indian, who even has not had the advantages of education, in the way of accumulating property, and gaining the respect and confidence of his fellow men, no matter of what colour or occupation they may be, I may quote Johnny Chilliheetsa, chief of the upper Nicola band, who owns hundreds of head of cattle and horses of as good breed as any in the country. He has been known to pay as much as $500 for a young pedigreed horse for stud purposes; he also

from time to time invests largely in bulls for the improvement of his cattle, and through his enterprise, intelligence and good management, backed by the strictest integrity, he can at any time, at the banks and business houses where he is known, get credit to the amount of several thousand dollars.

In the Northwest Coast agency the Indians own saw-mills, and dogfish oil manufactories: they also have many stores, and have commenced in a small way to can salmon and clams; nearly all the trades are there carried on, such as carpenters, blacksmiths, painters, &c., &c., as well as many other different enterprises which are being started, and wholly managed by the advanced natives, with every reasonable prospect of an average measure of success. In other portions of this extensive superintendency may also be noticed many undertakings in the way of substantial progress by the wards of the government who are steadily working their way towards independence and beginning to think that they are not only above the assistance of the department, but altogether superior to advice or control except, perhaps, when they get into difficulties.

Temperance and Morality.—As a whole the Indians are fairly moral and temperate, and if it were not for the great temptations to which they are exposed to some extent owing to the too frequent and indiscriminate issue of liquor licenses by the local authorities, and to the imperfect policing of the outlying districts—they would be exceptionally so.

General Remarks.—In some directions there has been a falling off in the earnings of the natives, while in others, hitherto unknown, there has been a decided gain. The competition which in nearly every field of labour the Indians have to contend against is becoming greater each year; they cannot now, or ever again, expect to make as much money as formerly when they were about the only people available to carry on the limited industries of the country; white men, Chinamen, Japanese and others, are daily increasing in the province and are, naturally, doing much of the work that fell to the Indian in the past. This result of the settlement of the country being expected, the Indians have been from time to time advised to turn their attention more to the cultivation of the land, the raising of stock, pigs, poultry, &c., through which they might, in time, establish a permanent source from which, by their own efforts at home, they might reasonably expect to make a comfortable living. Such advice, it is pleasing to note, in many instances has borne good fruit, as may be seen by the prosperous homes, the well tilled fields, the increasing flocks and herds, and other signs of a growing and lasting condition of independence.

In connection with the Coronation it was most gratifying to learn that the feelings of loyalty, freely given expression to by the Indians, were general. At Kitamaat, a little paper is published quarterly, in pamphlet form, and is known as the 'Na-Na-Kwa,' or Dawn on the Northwest Coast. In it I read the following notice, which will give an idea of the sentiments animating the natives:—

'A special programme of services was printed for use on Sunday, June 22 (1902), memento badges were struck off on a white fabric and presented to the people. A procession of chiefs and people, school and home children, formed at the school-house and marched to the church. The church was decorated with flowers and flags. The services were appropriate, special prayers were offered for King Edward.

'On Wednesday and Thursday, the 25th and 26th, the village was en fête: flags flying from the mission-house, the chief councillor's house, and the firemen's hall. The village ordnance piece, with an extra charge or two of powder, shook the mountains. Fire-crackers and pic-nics, a good and happy time generally, will fix an important date in the world's history in the minds of all the younger portions of 'Aiysala'—Kitamaat. God Save the King!'

I may remark that owing to their isolated position these people were not aware that the Coronation ceremonies had been postponed on account of the unfortunate and much regretted illness of the King.

In July, 1901, the town of Metlakatla was partly burned, when nearly all the mission buildings, the very fine English church, and two new Indian houses were destroyed. During the past winter and spring a substantial and commodious building (capable of taking in forty white girl pupils, besides accommodating the lady staff, in charge), has

been erected by the Church of England Missionary Society, and the department has liberally contributed towards the rebuilding of the Indian girls' boarding school. A new church is now springing up—Phœnix-like—from the ashes of the old one, and is, with the aid of subscriptions, the work of the Indians.

Many of the large villages on the coast have now their fire-halls and fire-brigades; but, unfortunately, at the time of the Metlakatla fire all the able-bodied Indians were at the canneries.

Last autumn, when travelling from Bella Coola to the Chilcotin country, engaged in laying off reserves for the Uhlchako and the Kluskus Lake Indians, I passed over trails of two hundred miles and upwards in extent which had been chopped out, bridged and kept in passable order for pack animals by the resident Indians. The latter pack through that country when engaged in their fall cariboo hunts, providing, as they say, 'their winter's beef.' They also pack for traders who have small trading posts at some of the remote Indian villages, where, generally, an Indian attends to the bartering for furs during the winter months, rendering an account of his stewardship to the white trader in the spring.

Much temptation is placed in the way of Indians all along the coast by the introduction of liquor by lawless and disreputable white men, who proceed from village to village in sloops loaded with poisonous intoxicants, which they sell at high prices to some of the natives, causing much misery and, in some cases, leading to crime. Owing to the number of coves and bays offering good hiding places to these small craft, and to the fact that there is no vessel of the preventive or any other service to look after them, these miscreants generally escape. During the summer, however, it is satisfactory to know that one of two men who had been very successful in thus making money and creating trouble on the west coast, was identified, arrested, tried, convicted and sentenced to a year's imprisonment.

Before closing I must take exception to the remark made in the Kwawkewlth agent's report, wherein he states: 'The Indians of this agency cannot by any means be considered peaceable and law-abiding. It was only last winter that a gun-boat had to be sent up to bring them to their senses.' The above statement is, to say the least of it, misleading. These Indians, although far behind others in advancement, are yet not as bad as that statement would imply. The facts in reference to the trouble alluded to are as follows:—About a year ago two of the Kingcome Inlet Indians had been suspected of stealing a cheque from a Port Simpson Indian. The latter laid an information and had a warrant issued for their arrest. Two special constables were in due course sent to execute it. They arrived when the Indians were having one of their winter feasts, having some other tribes with them as their guests. The constables were unfortunately of Indian blood and did not command the respect of the Indians, who think more of a full-blooded Indian than they do of a half-breed. The Indians refused to be arrested, and their tribesmen, without any show of violence, escorted the specials down to the beach, hustled them into their canoe and away. The 'gun-boat' that was sent up to bring them to their senses was the Dominion steamship *Quadra*, which took up the Superintendent of Provincial Police and three or four special constables. Captain Walbran, in command, is a stipendiary magistrate, and the despatching of the *Quadra* thus facilitated the bringing of the offenders to speedy justice. The Indians were arrested and tried, without any serious law-breaking having been attempted by them or their friends. The Indian agent, who has but recently been appointed to that position, formed his opinion, I presume, from hear-say, and no doubt thought he was correct in his conclusions. If on such occasions a little good judgment were observed, there would be but little trouble of a like nature. Had the Indian agent, not the present incumbent, gone to Kingcome Inlet, after the special constables had been so unceremoniously marched off, and advised them, the natives for whom the warrants were out would, I feel certain, have been handed over to the proper authorities.

I have, &c.,

A. W. VOWELL,
Indian Superintendent.

[*Received too late for publication in proper order.*]

PROVINCE OF ONTARIO,
MOHAWKS OF THE BAY OF QUINTE,
BELLEVILLE, October 31, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the annual report on the Mohawks of the Bay of Quinte for the year ended June 30, 1902.

Reserve.—The Tyendinega reserve in the county of Hastings extends along the north shore of the bay of Quinte from the town of Deseronto on the east to the township of Thurlow on the west, about nine miles, and averages two miles in width, approximately.

Vital Statistics.—The total population from the census taken in the said year is twelve hundred and fifty, of which there are three hundred and forty-two men, three hundred and fifty women, and five hundred and fifty-eight children and young people under twenty-one years of age.

Health and Sanitation.—The general health was pretty good; no serious cases of contagious diseases, except three deaths from diphtheria. Most of the people have been vaccinated and nearly all the children have had the mumps and measles and are now free from them.

Resources and Occupations.—Mixed farming and stock-raising constitute the chief employment, a few follow mechanical occupations and others work at Deseronto in the mills, factories and smelting-works.

The crops this year were very abundant, much above the average, except Indian corn.

This year 'The Bay of Quinte Mohawk Agricultural Society' held it's first annual exhibition on September 24 and 25, at the council-house and adjoining grounds. The fair was a gratifying success in every particular.

The display of horses, cattle and other stock was very good; the samples of grain and roots excellent, and the fruits were greatly admired.

The women made a most creditable exhibit of fancy work, paintings, &c., and the dairy products were choice.

Buildings and Stock.—Several new dwelling-houses have been erected, barns have been repaired; and the stock is pretty generally good and well taken care of.

Education.—Only three of the four schools on the reserve have been open during the year, on account of the scarcity of qualified teachers available for such schools. Miss Goode, an Indian teacher in the mission school, has been on all the year. Two white teachers, one in the eastern school and the other in the central school, taught most of the time. The irregularity of the attendance of the pupils is the chief drawback to advancement, and we are trying to overcome that.

Religion.—The Indians of this band are all Protestants, chiefly members of the Anglican Church; they have two stone churches and a good dwelling-house and farm on the reserve for their minister. The Presbyterians have a small frame church, and number about one hundred and forty, all told. There are a few of other denominations.

Characteristics and Progress.—The most of the farms tilled have fertile soil, injured somewhat by foul weeds and want of drainage, but these matters are getting attention now. The roads within the reserve are very well kept up, mostly by the Indians

themselves by statute labour and commutation money. There are several bridges within the reserve erected and maintained by the county of Hastings, and one gravel road from Marysville to Deseronto. The fences that were built some years ago are now pretty generally broken and out of repair.

Temperance and Morality.—Many of the Indians on this reserve are sober and industrious. Only a few use liquor to excess and spend their time in idleness. The morality of this band will compare favourably with that of many white communities.

The late agent, Mr. George Anderson, died last spring, most unexpectedly, after a short illness.

I have, &c.,

WM. R. AYLSWORTH,
Acting Indian Agent.

PROVINCE OF QUEBEC,
MONTAGNAIS OF LOWER ST. LAWRENCE—MINGAN AGENCY,
MONTREAL, November 3, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit my first annual report, for the year ended June 30, 1902.

Reserve.—Here there has never been any special reservation of land made for the Indians.

Tribe.—All the Indians here belong to the Montagnais tribe.

Vital Statistics.—The population consists of twenty-nine families, making a total of one hundred and forty-five individuals. The number of births during the year has been sixteen, and deaths, eleven: three adults and eight children, most of the latter being infants.

Health and Sanitation.—The health of this band of Indians has been generally good during the year. There were many cases of small-pox on this part of the Labrador coast during the early summer among white settlers It was of a very mild type. This caused a panic among the Indians, and through dread of infection they only remained a short time on the coast after my arrival at Mingan.

Seeing the danger they were exposed to by remaining on the coast, I immediately made arrangements with the Hudson's Bay Company's agent here to give them their supplies earlier than usual to enable them to leave for their hunting grounds, which was done at all the posts in this district, and they were all off for the interior, away from any risk of infection, in July, except a few old people who are unable to hunt and remain at the posts during the winter; thus none of the band were exposed. These Indians were all vaccinated by Dr. Tremblay, in June, except three who arrived out from the interior in July, after he had left for the eastern limits of the agency.

The circulars sent down early in the season for distribution to the Indians regarding sanitary precautions, have had a good effect, and it is noticeable that the Indians keep their houses and camping grounds cleaner than usual.

Resources and Occupations.—The members of this band are fur-hunters, hunting being the only means they have of making a living. They have done well this last season, though the catch of fur has not been an average one; yet owing to the high prices prevailing for all kinds of furs, their returns from the hunt have enabled them to live comfortably.

Buildings.—They have nine very comfortable houses, and others are building as their means permit.

Stock and Farming.—No stock of any kind is kept by the Indians here, nor do they plant or attempt any kind of farming.

Education.—There are no schools in any part of this agency for the benefit of the Indians, their only means of instruction being during the annual visit of their missionary, which lasts for two weeks every season.

Religion.—All here are Roman Catholics, and as a rule show much attention to all matters pertaining to their faith. There are two churches in the agency in use for this purpose, one at Mingan and a smaller one at Musquarro.

Characteristics and Progress.—There are not many changes to note, the only industry the Indians carry on being hunting in the fall, winter and spring, and the returns from this source are generally sufficient to support each family in comfort for the few months they are out on the coast during the summer, during which time they do little, if any, work, except making canoes and otherwise preparing to return to the interior. Owing to the high prices prevailing for the furs they catch, they are now more prosperous on smaller hunts than formerly.

Temperance and Morality.—Many of the Indians here have been addicted to drinking for years past, but this season I have been able to put a stop to the local supply, which they obtained from white settlers in the vicinity, and to a certain extent prevented them procuring the usual amount from Quebec by the local steamers plying between there and the coast. This liquor has been supplied to them by small dealers in Quebec, with whom they do some business.

While on the coast this season there were only three cases of Indians being the worse for liquor which came under my notice. I should have had these arrested and held until they informed who supplied them with the liquor, but there was no means of doing so, as the stipendiary magistrate who attends to these matters on the coast, had to return to the Saguenay early in the season, and did not return to the coast again as expected in September. However, if thought advisable, this can be taken up next season.

The morals, other than drinking, on this coast, especially in the Mingan agency, where they do not come in contact with many whites, are generally good.

I have, &c.,

W. D. B. SCOTT,
Indian Agent.

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KISPAIAX, UPPER SKEENA, BABINE AGENCY, B.C.

REPORTS OF PRINCIPALS

OF

BOARDING AND INDUSTRIAL SCHOOLS

PROVINCE OF ONTARIO,
ST. JOSEPH'S INDIAN HOME,
FORT WILLIAM, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—We have the honour to submit our annual report of the St. Joseph's Home, for the year ended June 30, 1902.

Location.—The St. Joseph's Home on the Fort William reserve, is beautifully situated on the south bank of the Kaministiquia river, about one mile and a half from the rising town of Fort William, and about four miles from the grand Mt. McKay.

Land.—There is only one acre of land in connection with the Roman Catholic Mission school. It is divided into the following : playgrounds for the boys and girls, and vegetable and flower gardens. The land when well cultivated produces fine vegetables.

Buildings.—The home is of frame on a stone foundation, 70 x 45 feet. There is a storehouse, 12 x 20 feet. The class-rooms, 20 x 44 feet, are a few rods from the main building. There is also a hen-house and wood-shed.

Accommodation.—There is accommodation for about thirty-five pupils and a staff of five or six.

Attendance.—The attendance at the home during the year was thirty-five and the number of day pupils was seventeen boys and nineteen girls.

Class-room Work.—The authorized programme of studies is followed and the pupils are fond of class work and attentive. They have their regular time for study, morning and evening.

Farm and Garden.—There is no farm in connection with this home. Our garden is good. The pupils take delight in watching the different kinds of vegetables coming up.

Industries Taught.—The girls are trained in domestic work, including baking, cooking, sewing, knitting, darning, dressmaking and laundry work. The boys are taught when not in class to look after their own apartments each day, help in the garden, attend to the wood, &c., and go on errands of trust.

Moral and Religious Training.—The pupils are carefully instructed in morals and religion by their teachers and also twice or thrice a week by the pastor of the parish. They attend all the religious services held in the church, and morning and evening prayers in the chapel. They sing the hymns very well, taking soprano and alto ; the boys sometimes sing the tenor.

Health and Sanitation.—The general health of the pupils has been good. There were no deaths. In the spring there were four cases of measles, of a very mild form, and one case of fever.

Water Supply.—By means of a force-pump placed in the basement the water is conveyed through lead pipes to the different parts of the institution.

Fire Protection.—All fire-appliances are in order. Three Star glass-lined fire-extinguishers are placed in convenient parts of the building. Two fireman's axes and seventy feet of hose are kept in constant readiness.

Heating and Lighting.—The building is very comfortably heated by two hot-air furnaces. The only means of lighting the institution at present, is by the use of coal oil lamps.

Recreation.—The girls have different little games, besides swinging, baseball, walking and dumb-bells. The boys' favourite game is football. Both boys and girls like the water, and often during the summer months, go rowing and fishing.

We have, &c.,

SISTERS OF ST. JOSEPH.

PROVINCE OF ONTARIO,
MOHAWK INSTITUTE,
BRANTFORD, July 28, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit herewith a report on the Mohawk Institute for the year ended June 30, 1902.

This institute was established by 'The Corporation for Propagating the Gospel in New England,' briefly 'The New England Company,' in the year 1831.

Location.—It is situated a mile and a quarter from the centre of the city of Brantford, most of the farm lying within the city boundary, seven miles from the Grand River reserve.

Land.—The land occupied by the school, comprises four hundred and ten acres, as follows:—lot No. 5, Eagles Nest, township of Brantford, ten acres, Crown grant (on this are the buildings); one hundred and ninety-four acres by license of occupation; part lot 2, Eagles Nest, in the city of Brantford, twenty acres, purchased; Mohawk Glebe lot, city, one hundred and eighty-six acres, rented.

Buildings.—The buildings are of white brick, having a basement, first and second floors with a third floor in part arranged in case of need as a hospital for contagious diseases.

The basement of the main building contains girls' play-room, clothes-room, lavatories, kitchen, dining-rooms for employees, pupils' dining-hall and store-rooms.

The first floor contains two large school-rooms, sewing-rooms, officers' quarters and offices.

The second floor contains dormitories and hospitals.

The west wing of the building forms the superintendent's residence.

The laundry, a detached two-story brick building, is fully equipped and has shower-baths for the girls.

The boys have a two-story play-house at some distance from the main building. The basement (brick) contains clothes and dressing-room; lavatory, with shower-baths; the upper story (frame) contains band-room, reading-room and play-room.

All floors are of hardwood, oiled, excepting the play-rooms, which have cement floors.

There are also three cottages for workmen, to one of which a large kitchen addition has been made this year.

The farm buildings are extensive, having accommodation for sixty cattle, nineteen horses and two hundred pigs. There are also two greenhouses, three silos, an ice-house, a workshop, two poultry-houses and a brick dairy. A new hog-pen has been erected this year costing $140, and a root cave made with a capacity of two thousand bushels.

Accommodation.—Accommodation is provided for one hundred and twenty-five pupils, fifty-five boys and seventy girls, and a staff of eleven officers.

Attendance.—The returns for the quarter ended June 30, 1902, show an attendance of fifty-nine boys and seventy-one girls classified as follows :—

Standard	I	12 pupils.
"	II	8 "
"	III	46 "
"	IV	22 "
"	V	20 "
"	VI	22 "
		130 "

The average attendance for the year was one hundred and twenty-four.

Class-room Work.—Class-room work covers the full course of the public schools of Ontario. The progress has been very satisfactory and the speaking of English has greatly improved.

Three pupils passed the entrance examination last month and a fourth was recommended.

The school hours are from 8.30 to 12 a.m., and from 1.30 to 4 p.m., in summer, and in winter from 8.45 to 12 a.m., and from 1.30 to 4 p.m., and from 7 to 8 p.m.

All pupils in standards V and VI have private study from 8.30 to 9.30 p.m.

Pupils form two divisions, A and B : first week, A division attends school in the morning, B division in the afternoon ; second week the order is reversed.

The pupils in standards I and II are in school full time throughout the year.

Farm and Garden.—Owing to the continued drought many of the crops were a failure ; the heat of July (being six degrees above the average of twenty-five years) destroyed all small fruits and greatly injured other crops, excepting corn.

Industries Taught.—*Carpentry and Painting.*—Under instruction the boys do all the work for the institution, farm and the mission stations on the reserve.

Brass Band.—The band of fifteen boys continues to make good progress.

Farming, Gardening and the care of Greenhouses.—These form the principal occupations of the boys and include a dairy of over thirty cows, twenty brood sows and their progeny, about two hundred pigs, and the growing of plants and flowers for market.

Girls' Work.—The girls are trained in domestic work, including sewing, knitting, dressmaking, cooking, baking, laundrying and butter-making. Those completing the course have no difficulty in finding situations at good wages.

Moral and Religious Training.—Morning and evening prayers are conducted for the whole school daily, and divine service at the Mohawk church at 11 a.m., on Sundays. Religious instruction is given daily in the schools, and on Sunday from 9 to 10 a.m., 2.30 to 3.30 p.m., and 7 to 8 p.m.

The boys are organized as a company of cadets, divided into four sections under senior boys, who are responsible for the cleanliness and order of their respective sections. Four section monitresses exercise similar supervision over the girls.

Health and Sanitation.—We suffered an extremely heavy attack of measles, and owing to the unfavourable weather during the spring months, there were many cases of grippe. Three deaths occurred during the year, one from acute Bright's disease, one from pneumonia and one from congestion of the lungs.

The sanitary condition of the institution is all that could be desired.

Water Supply.—Water is pumped by a windmill from a well to two large cisterns on the top of the building and to a tank in the grounds for additional supply during the summer months. This year we have added a hot-air engine in place of the horse power to supplement the windmill.

Fire Protection.—Every dormitory is furnished with two or more fire-escapes, and for further protection we have one Fire King, twenty-four ever-ready fire-extinguishers, fire grenades in all principal buildings, axes, and also buckets filled with water in specified places.

Heating and Lighting.—The buildings are heated throughout with six coal furnaces furnishing a constant supply of warm, fresh air, the foul air being removed by heated flues drawing it off from the floors.

All buildings, stables included, are lighted by electricity.

Recreation.—The recreation hours are: one hour at noon, two hours in the evening in summer, and one hour in the winter, and for school divisions throughout the year from 4 to 5 p.m.; also one half holiday each week.

There is no school from July 16 to August 21. During this time the master and governors take their vacation; each pupil has half a day holiday and the industrial work of the institution goes on as usual.

The boys are furnished in their playground with swings and horizontal bars; they also have a field where they play cricket, baseball and football. The girls are provided with swings, croquet, balls, skipping ropes, &c. Those who prefer to read, are furnished with magazines and books from the school library, and the boys have the daily newspapers sent to their reading-room.

I have, &c.,

R. ASHTON,
Superintendent.

PROVINCE OF ONTARIO,
MOUNT ELGIN INDUSTRIAL INSTITUTE,
MUNCEY, October 7, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to transmit a report on the condition and prospects of the Mount Elgin industrial institution. It is with much pleasure that we report steady advancement in all lines of our work.

Location.—It would be difficult to find a more suitable site than the one occupied, on the south bank of the River Thames. It is less than a mile from Muncey station, on the M.C.R., St. Clair branch, at easy distance from the cities of St. Thomas and London.

Land.—The land set apart for this industrial farm is all that could be desired in quality, but not in quantity. The lack in quantity is in part supplied by leasing through the government additional land in part from the Chippewas of the Thames and three hundred acres also from the Oneida reserve, just across the river, so that the land occupied is about equally divided by the Thames river. A splendid new bridge to span this noble river is under construction by the Middlesex county and is to be completed this fall, and when completed it will add immensely to our comfort and convenience.

Farm.—We employ a general foreman over all departments of industry, who largely plans the work, and assigns it, and the boys who are to assist two other foremen on specific lines of the work such as farming, gardening, care of live stock, building and repairing. The farm amply supplies the institution with flour, vegetables, roots, fruit, pork, beef, fowl, milk, butter and eggs.

Buildings.—Standing apart from the group of buildings but on the estate, we have two comfortable residences occupied by institution officers. The reconstruction of the old institute is so complete that it passes for a splendid new building, and is a magnificent annex to the stately new institution erected and equipped in 1895. This annex has two splendid residences, also occupied by institution officers, and in addition fur-

nishes comfortable hospital accommodation and two well equipped school-rooms, which allow the large school-room in the main building to be used as a chapel.

Class-room Work.—The pupils are divided into three sections according to their classes, and two of these sections are in school each day, and the other is employed in the different lines of industry. This plan gives the advantages of a graded school, for when one pupil of a class is in school all the class must be. In this way the foreman over the different industries knows just what help he will have each day, and can plan the work accordingly. Our text-books, promotion papers and examination including the high school entrance, are all the same as the public schools of Ontario. We are subject to the county school inspector. Our school-rooms, lavatories, dormitories, and recreation-halls are under the daily inspection of the teachers and matron, and the work is divided for that purpose.

Accommodation.—While the number of pupils authorized by the department is one hundred, we have accommodation for one hundred and twenty. When application is made for admission of pupils, we send the usual blank form, when that is filled, if all the questions are satisfactorily answered, it is placed on file and the pupils are admitted in the order of the applications. Frequently such applications have to wait for months and sometimes longer before there is room.

Religious Training.—The daily reading of the Scriptures with the use of maps, charts, black-boards and questions, accompanied by songs and prayer. We are favoured in having a mission church on each side of the institution at less than a mile either way, where the pupils delight to go each Sabbath forenoon, while the Sabbath school at the institute manned by the officers is the attraction of the afternoon, when there is seldom an absentee.

Health and Sanitation.—An abundant supply of living water, first-class ventilation, and a complete system of sewerage accounts in part for the excellent health of the pupils.

Heating and Lighting.—Our hot-water system of heating in both the main building and annex is not only economical, but it and the lighting by acetyline gas, lessens the danger of fire. This is the more important, as our fire-protection is far from satisfactory, and must be improved.

Ex-pupils.—About twenty-five pupils retire each year. Some return to the reserves, but largely they go out to service among the white people; which latter course we encourage, as we consider it much better for them.

I have, &c.,

W. W. SHEPHERD,
Principal.

PROVINCE OF ONTARIO,
SHINGWAUK AND WAWANOSH HOMES,
SAULT STE. MARIE, August 13, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of the Shingwauk and Wawanosh Homes for the fiscal year ended June 30, 1902.

Location.—The Shingwauk and Wawanosh Homes are situated on the banks of the St. Mary's river, one and one-half miles east of the central part, and within the town limits of Sault Ste. Marie, in the province of Ontario. The homes are not situated on any reserve.

Land.—The area of land in connection therewith is ninety-three acres, comprising part of lots one and two, in Tarentorus township, which was acquired by purchase, and is held in trust by His Lordship the Bishop of Algoma. Originally forest, the land is

now, with the exception of a few acres, cleared. The soil is extremely light and rocky and is best adapted for grazing purposes. A large portion of it is quite useless for farming purposes.

Buildings.—The buildings are admirably situated, fronting the river, and are sheltered on the north and west by woods, and groves of birch and maple. They consist of: the Shingwauk and Wawanosh homes, or main block, 160 x 37 feet, with various wings and principal's residence adjoining, in which are the offices of the institution, main dining-hall, kitchens, visitors' entrance, staff-rooms, furnace-rooms, store-rooms, lavatories and dormitories. A little to the east and almost in line with the main block stands a large two-storied frame building, 60 x 30 feet, the ground floor of which is used as a drill-hall and play-room for the boys. On the upper floor the senior school is held. Some sixty yards from the building, standing due east and west, is the Bishop Fauquier memorial chapel, erected in 1883 by friends, subscribed anonymously in England and Canada, as a tangible, enduring and useful memorial to Algoma's first revered bishop.

Facing the homes and chapel are two more buildings: (a.) our hospital, with attendant's cottage adjoining, standing in all its usefulness of isolation, a bright cheery building, with wards containing six beds, convalescent room, kitchen and dispensary; (b.) the farmer's cottage, with frame laundry, 20 x 40 feet, annexed, five minutes' walk from which brings us to the factory or carpenter's shop, situated on a point running well out to the river and with foreman's cottage close by. Add to the aforementioned buildings the shoe-shop, situated in the rear of the main block, barns, stables, and various minor buildings equally indispensable in their particular spheres of usefulness, and a good idea is obtained of the Shingwauk property as it stands to day.

Since my last report, the following repairs and improvements have been effected, viz: enlarging dining-hall and junior school-room, painting roof of Wawanosh building, reshingling roof of principal's residence, repairing roof of hospital, laying floor in girls' play-room, painting kitchens, repairing carpenter's cottage, building storm-porches, erecting and repairing parts of gymnasium in boys' drill-hall.

Accommodation.—There is accommodation in the schools for one hundred pupils (sixty boys and forty girls) and twelve members of staff.

Attendance.—The total attendance during the year was seventy-one, namely, fifty-one boys and twenty girls; nine boys and two girls were discharged; six girls were admitted and one died. The average daily attendance was sixty-three.

Class-room Work.—The school is divided into senior and junior divisions under the tuition of two teachers in separate buildings.

Our class-rooms are bright cheery rooms, equipped with automatic desks, large wall maps, globes and all necessary school material, including kindergarten material for the juniors.

The subjects taught are: Scripture, arithmetic, geography, history, grammar, reading, spelling, writing and drawing.

Grammar is the young Indian's greatest difficulty, while penmanship and drawing are to him natural gifts.

The hours of attendance are from 8.30 to 12 a.m., and from 1.30 to 5 p.m., with fifteen minutes recess in each session. There is also an hour of study from 7 to 8 p.m. Wednesdays and Saturdays excepted. The progress made in both schools during the past year was most satisfactory. Twenty-six pupils recently qualified for promotion into higher grades.

The standing of pupils at present in attendance is as follows:—

Standard I.	10	pupils.
" II.	18	"
" III.	10	"
" IV.	16	"
" V.	11	"

Industries Taught.—The following industries, namely:—carpentry, shoemaking and farming, have been in operation during the year and have been fully occupied in meeting the demands of the institution. In addition to the above trades all the

domestic work of the institutions, such as scrubbing, washing, bread making and laundry work, is also performed by the pupils under the supervision of instructors. The girls are taught sewing and general domestic work.

Farm and Garden.—The farm is worked by a number of boys with a practical farmer in charge. The average acreage this year has been increased from forty to forty-five acres. We have also this year rented an additional twenty-one acres of hay land, which promises an excellent crop. About eleven acres have been planted in potatoes and various other vegetables, and fifteen acres in oats. We are to a great extent hampered by a rocky and light soil. The prospects, however, for the ensuing year are on the whole good. In winter besides the care of stock, the farmer and his boys are engaged in teaming, chopping and sawing wood for the institution.

Moral and Religious Training.—The religious training is that of the Church of England. Pupils and staff attend the Shingwauk Memorial Chapel, or St. Luke's Pro-Cathedral in town. Morning and evening prayers are held in the school-room every day, and Sunday school on Sunday afternoons. The pupils are well behaved and reverent during the services.

Methods of punishment adopted are: fines, impositions, and keeping in to work on half holidays. Corporal punishment is administered in cases of gross disobedience only and as a last resource.

Health and Sanitation.—The health of the pupils throughout the year was on the whole good. There were several cases of minor ailments, and I regret to have to record the death of one girl from acute phthisis. The sanitary condition of the school is good. Drains are kept clean and regularly flushed. Lime and other disinfectants are used, all large refuse is placed in barrels and carted to the farm daily.

Water Supply.—The water is pumped from the river by steam power through iron pipes into large tanks placed in the roof of the main building and laundry.

Fire Protection.—Hydrants are situated at convenient distance outside of the main building and on each flat of the interior, to which one hundred feet of hose kept ready for use in case of fire can be readily attached. The Shingwauk home is also supplied with four chemical fire-engines and fireman's axes.

Heating and Lighting.—The main building is heated throughout by a hot-water system. The plant consists of two No. 8, and one No. 7 Daisy boiler, sufficient Safford radiators and connections. The system works well and is satisfactory. Wood stoves are used for heating all detached buildings, including the chapel. Coal-oil lamps are used throughout the building for lighting.

Recreation.—In summer the chief recreations are football and baseball. Indoor games are provided in the winter, but skating and hockey on the St. Mary's river afford the principal attraction. Swings are provided for the girls and smaller boys. Books and magazines are also supplied from the school library.

A pupils' day in the Shingwauk Home is divided as follows:—

Seniors.—School work	4	hours.
Trade or housework	4½	"
Meals	1½	"
Ablutions, bed-making and prayers	1¼	"
Recreation	3¾	"
Sleep	9	"

Except on Saturdays, when the number of hours devoted to study must be added to those of recreation:—

Juniors.—Class work	6⅓	hours.
Ablutions, bed-making and prayers	1¼	"
Meals	1½	"
Recreation	4	"
Sleep	10¾	"

I have, &c.,

G. L. KING,
Principal.

PROVINCE OF ONTARIO,
WIKWEMIKONG INDUSTRIAL SCHOOLS,
WIKWEMIKONG, July 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on this institution for the past year.

Location.—This industrial school is located on the unceded portion of Manitoulin island, ten miles north of Manitowaning agency in the Wikwemikong village, on the hillside which forms the west shore of Smith bay. The school is operated in connection with the mission, and the Indians, some years ago, granted us the use of about two hundred acres of land for the support of the mission and of the school together.

Buildings.—The boys and girls are educated in two different institutions, about two hundred yards apart, which are managed by two separate staffs of men and women, respectively, under the common superintendence of the principal.

The boys have their class and study-rooms, with refectory, wardrobe and play-hall in a two-story frame house, 50 x 100 feet. The chapel, the rooms for the sick, the kitchen and the dormitory are in the main building of the mission. Therein is also the lodging of the staff. It is a large stone structure, 110 x 60 feet, with two stories and a high French roof. The dormitory is very large, beautiful and healthy, being 106 x 45 feet, and 17 feet high ; connected with it are the bath and shower-bath rooms, and the most perfect system of water-closets.

The girls' school is a frame building, 108 x 50 feet: on the second floor is a class room, 40 x 20 feet, the chapel, a sewing-room and rooms for the staff. On the first floor is another class-room, the dining-room, the kitchen and two parlours. The dormitories and wardrobes are on the third floor. A few yards away from this building is the wash-house, 40 x 50 feet, containing two stories.

Towards the shore stands the blacksmith, tinsmith and paint shops combined ; close to the shore is the carpenter-shop in connection with the saw-mill and wood-working machinery for planing, matching, turning, making mouldings, doors and sashes, &c. The shoemaker-shop and the bakery are in the old mission building. There are, besides, on the farm, three barns with spacious stables in the basement of each, piggeries, henneries and sheds for agricultural implements and carriages.

Accommodation.—Eighty boys can be accommodated, and about fifty-five girls.

Attendance.—We have had present in the course of the year seventy-six boys and fifty-two girls, making a total of one hundred and twenty-eight pupils. The department contributes to the support of this institution by a grant of $60 per capita for one hundred and twenty pupils, and by providing for the school-material.

Class-room Work.—The class-room work is governed by the official programme of studies for Indian schools. The time appointed for it is from 9 to 11.45 a.m., and from 1.30 to 4.15 p.m., with a short recess in the middle of each session. There is also another hour of study at 7. p.m., for religious instruction, music-lessons and private work. The boys of the fifth standard were present in class only two hours and a half, the rest of the time being employed at their trades. In the same manner the big girls give the most of their time to sewing, dressmaking, knitting, baking and all kinds of housework.

The pupils are about equally divided into four sections, and are under the tuition of four different teachers. The lower grades are taught in the same room with the day-scholars.

Farm and Garden.—About a hundred acres of the land at our disposal is tilled and and the rest is used as a pasture. This land is poor and exceedingly stony. The farm is managed with a view to supplying the mission and the school with meat, vegetables, milk and butter. It is well stocked with cattle, sheep, horses, hogs and chickens. The work is done partly by the boys, with the help of Indian workmen. About two acres are laid out and cultivated as a kitchen garden.

Industries Taught.—Boys in the fourth and fifth standard are trained to different industries We had this year five carpenters, three blacksmiths, two shoemakers and five farmers.

Besides this special training given to a limited number of boys, all the other pupils are employed a few hours daily, each one according to sex and ability, at various kinds of labour, such as sweeping, scrubbing, sawing and splitting wood, dairying, gardening, stock-feeding, helping in the kitchen, in the mill, and on the farm. The laundry work is done at the girls' school, a windmill supplying them with the water necessary.

Morals and Religion.—The pupils are instructed very carefully in morals and religion by their teachers and by the principal himself, and great progress is made in that respect every year by the pupils in general. They attend all the religious services held in the church.

Health and Sanitation.—The sanitary condition of the school is excellent, and the health of the pupils has been good. It is, however, sad to say that there is in nearly all Indian children of this part of Ontario a great propensity to all sorts of lung diseases and to consumption.

Water Supply.—A windmill and a large tank erected three years ago supply the water to the whole institution. They constitute also the principal protection against fire. Besides we have ten Star fire-extinguishers, five fireman's axes and buckets full of sand against lamp explosions.

Heating.—Both schools are heated with box stoves, and kept quite comfortable. There is a hot-water furnace in the main building where the boys dormitory is situated.

Recreation.—Two hours daily, besides Saturday afternoon, are given exclusively to recreation. Both schools have playgrounds, although small, furnished with suitable games and gymnastic appliances. The boys have also a play-hall for rainy weather, winter and evening recreations.

I have, &c.,

G. A. ARTUS, S.J.,
Principal.

MANITOBA SUPERINTENDENCY,
LAKE MANITOBA INSPECTORATE,
PORTAGE LA PRAIRIE, September 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report of my inspection of boarding and day schools in my inspectorate for the past year.

PORTAGE LA PRAIRIE (SIOUX) BOARDING SCHOOL.

Mr. W. A. Hendry, principal. Miss Hendry, matron.

This school is under the auspices of the Foreign Missionary Society of the Presbyterian Church of Canada.

Enrolment.—Twenty-three: boys, ten; girls, thirteen.

Classified thus:—

Standard I	13
" II	0
" III	4
" IV	3
" V	3

The school is conveniently situated to this office, and is frequently visited. It has accommodation for forty pupils. The building is frame, and in good repair, except the annex, which is used as a class-room, the exterior of this is badly in need of paint. The class-room work is good, considering that most of the pupils are very young. Besides class-room work, the boys are instructed in gardening and other useful employments, doing the greater part of the chores about the institution. The girls receive training in sewing, knitting, and household work. Two or three cows would be a great assistance to the school; besides being a saving of expenditure, they would be of practical benefit to the pupils in learning to take care of them. There is not enough attention given to this important branch of Indian training, the female pupils should be taught how to milk a cow, and make butter, and the care of stock generally; the school being situated in town is against it in this respect, but still it could be carried on in a small way.

Needless to say, the religious welfare of the children is well looked after, services are held morning and evening.

The expenditure is kept within the revenue.

The school is within the bounds of the town fire-protection. The building is heated by a wood furnace, and lighted by electricity.

Pine Creek Boarding School, R.C.

The Rev. P. Bousquet, O.M.I., is principal.

The enrolment is sixty-four with a departmental grant for fifty-five.

Classified:—Standard	I	1
" "	II	35
" "	III	6
" "	IV	11
" "	V	6
" "	VI	5

The class-room work at my last inspection was not quite up to the mark. I do not think sufficient attention is given to practical common school education; some of the pupils show considerable ability in drawing and painting.

Whether this kind of training will be of much benefit to them in later life is problematical, outside of the class room the training is excellent, the boys are taught gardening, care of stock, carpentry, and several other useful occupations. The soil will not admit of farming, as it is low and stony; about five acres are cultivated as gardens. A saw mill has been put in operation and some of the larger boys are obtaining a good training in the manufacture of lumber, &c. A gasoline engine is used to run the mill, it is also used to pump water for the different buildings of the establishment. The Reverend Fathers are erecting a number of outbuildings this season, and they intend to build more next year. This will be so far as buildings are concerned a model institution when all the contemplated improvements are completed, it is a hive of industry, both pupils and staff are kept busy at something, an object lesson for the Indians.

The girls are instructed in sewing, knitting, dairying, general housework, &c.

The school-building is constructed of solid stone, three floors and full-sized basement, size 114 x 49 feet, and has accommodation for one hundred pupils, some interior work is yet to be done before the building is fully completed. The building is heated

by steam, and is comfortable in the coldest weather. It is protected from fire by two water tanks in the attic connected with hose on all floors, and in addition to this there are two fire-extinguishers.

The quality of food is plain, but wholesome, and well prepared.

The pupils are comfortably clothed.

A day school is conducted in connection with the boarding school, the average attendance is about fifteen; pupils receive the same class training as in the boarding school.

PORTAGE LA PRAIRIE AGENCY.

Swan Lake Day School, Presbyterian.

Mr. Kemper Garrioch, teacher. Enrolment, nine, with an average attendance for the year of six and a-quarter. The school has only been in operation for one year, and as yet is in the experimental stage. The teacher is doing good work among the Indians. It is expected the attendance will be larger next year.

The school-building is a new frame structure with residence for the teacher above.

MANITOWAPAH AGENCY DAY SCHOOLS.

Sandy Bay, R.C.

Miss Olive Goulet, teacher. Enrolment, twenty-seven. Thirteen in standard I, ten in standard II, three in standard III, and one in standard IV.

Average attendance for last fiscal year, sixteen and one-quarter. There are eighty-five children of school age on the reserve, but owing to the apathy of parents, and the distance that many of them are from the school, the average attendance is light, frequent change of teachers has also been against the school.

Frame school-house in good repair, exterior recently repainted. Equipment ample.

Lake Manitoba, R.C.

Mr. L. E. Martel, teacher. Enrolment, twenty-one; average attendance last year, nine. Forty children of school age on the reserve.

Classification: standard I, eleven; standard II, seven; standard III, three.

This has always been a poor school, but this year a slight improvement is noticeable. Frequent change of teachers, indifference of parents, and distance of pupils from the school, all tend to the undesirable state of affairs. One of the great troubles in the day schools is lack of aptitude and enthusiasm of teachers.

It is a comfortable log school-house in good repair. Ample equipment.

Ebb and Flow Lake, R.C.

Miss Beaubien, teacher. Enrolment, sixteen; average attendance for year, fourteen.

Standard I, eight; standard II, two; standard III, six. This school has made good progress during the past year. Miss Beaubien has the faculty of imparting instruction, and winning the confidence of the pupils.

The Indians of the band take considerable interest in the school. I am in favour of lady teachers where it is possible to employ them, the trouble is that most of the reserves are so isolated that they are unsuited for female teachers. The old log school-house is to be abandoned this fall for a new building just completed, the Indians have given considerable assistance in its construction.

Upper Fairford, C.E.

Rev. George Bruce, teacher. There was an enrolment of seventeen pupils, with an average attendance of nine last year,

There are twelve pupils in standard I; three in standard II; and two in standard III.

Owing to the absence of the pupils, I was unable to inspect this school during my late inspection trip, the children had accompanied their parents to Lower Fairford to attend the annuity payments.

The school-house is a very good frame building, in good repair and well equipped.

Lower Fairford, C.E.

Robert Bruce, teacher. This school had an enrolment of twenty-eight pupils, with an average attendance for the year of seventeen. Classification: standard I, seventeen; standard II, eleven.

This is a poor school and always has been since I have been inspecting it. The present teacher lacks experience and other qualifications necessary in the make-up of a successful teacher. The attendance is very irregular, owing to the distance that many of the pupils are from the school. Part of them live on the opposite side of the river, and it is difficult at times to get across. This is a good log school-building, plastered outside, well ventilated and well equipped.

Little Saskatchewan, C.E.

Mr. J. E. Favell, teacher. The enrolment was twenty-two, with an average attendance for the year of twelve.

There are eleven pupils in standard I, eight in standard II, one in standard III, and two in standard IV.

I cannot report progress for this school, as the roving habits of the parents make the attendance irregular. The teacher's qualifications are not good. He is an excellent man on the reserve among the Indians, and very valuable in this respect. It is a log school-house in fair repair, with ample equipment.

Lake St. Martin, C.E.

Mr. T. H. Dobbs, teacher. The enrolment at this school is thirty-six, eight of whom are under school age. The average attendance for the year was twenty-five. Twenty-three in standard I, nine in standard II, three in standard III, and one in standard IV.

This is now the banner day school of this agency. It has made good progress the last two years, as the teacher, parents and pupils are interested in the work.

The school-house is built of logs. It is getting old, and a new building will have to be put up soon. It may last for a year or two. The school equipment is ample.

Crane River, C.E.

John Moar, teacher. There was an enrolment of thirteen and an average attendance for the year of nine pupils. There are seven pupils in standard I, four in standard II, and two in standard III.

Mr. Moar is not well qualified for a teacher. The school is not making progress. It is dead, and always has been, in my opinion. For all the benefit it is in an educational way, it might as well be closed. As a nursery for young children during part of the day it is all right. The teacher is a useful man among the Indians of the reserve. It is a log school-house, in first-class repair, and well equipped.

Waterhen River, R.C.

This school has been closed since June 30, 1901, as it was impossible to find a teacher for it.

The school-house is a good log building, but is getting a little out of repair. It is hoped that a teacher will soon be found, as the Indians are growing somewhat impatient at the delay.

Shoal River, C.E.

Rev. A. T. Norquay, teacher. The enrolment was twenty-six and the average attendance about twelve. There are twenty pupils in standard I, four in standard II, and two in standard III.

This was my first inspection of this school, so I am unable to report as to progress. I found eighteen pupils present, all of the first standard. Mr. Norquay should be a good teacher, as he has the necessary qualifications. Mrs. Norquay teaches the girls to sew and knit, and finds them apt pupils. The Indians take but little interest in the school. The school-building is old and some repairs are necessary.

PAS AGENCY.

All the schools in this agency are under the auspices of the Church of England.

Pas Day School.

Miss M. Hines, teacher (since resigned). The number of pupils enrolled is forty-eight. Present at inspection, twenty-nine ; and the average attendance for the year was nineteen.

Miss Hines has done good work the last year. Considering that the children are away with their parents on hunting trips about half of the time, the progress has been remarkable, showing what can be done when the teacher is energetic and zealous in the work. The resignation of Miss Hines is a serious loss to the school.

The school-house is a large frame building in good repair. It is divided below into two class-rooms. One of these is used as a public school for white and half-breed children, under the Department of Education of the Northwest Territories. The upper floor of the building is used as a storehouse for supplies.

Chemawawin Day School.

Mr. R. Taylor, teacher, succeeding Mr. Hooker resigned. The enrolment is twenty-eight, and the number present at inspection was twenty-two. Average attendance for year, sixteen.

This was perhaps the best school in the agency under Mr. Hooker. As Mr. Taylor had just started, and this was his first school, it would be unfair to criticise his work. He should make a fair teacher with experience. It is a log school-house, nearly new and in good repair.

Big Eddy Day School.

Nathan Settee, teacher. The enrolment was thirty-nine, and the number of pupil present at inspection was twenty-seven. This school had been closed for one year, and just reopened before my visit, consequently I had not an opportunity to judge of advancement. The pupils are a very bright lot, good material for the new teacher to show what he can do. It is a log school-house in good repair, well equipped.

Red Earth Day School.

Thomas Bear (an Indian) is teacher. It had an enrolment of twenty-two, and the number present at inspection was nineteen. The average attendance is thirteen.

This school has been at a stand-still the past year, in fact has lost the little standing that it had. Mr. Bear has just started his work, succeeding Mr. W. C. Lundy, and I look for some result next year. The building used for school purposes is a chapel rented from the Church Missionary Society. It is in rather poor repair. The equipment is ample for present requirements.

Cumberland Day School.

Charles Quinney, teacher (an Indian). This school has an enrolment of thirty-eight pupils; the number present at inspection was twenty-five; average attendance, thirteen.

This school was reopened a year ago after being closed for a number of years. For all the progress made, it might have remained closed, as the teacher is utterly unqualified for the work. The school is held in an old building rented from the Church Missionary Society, and is in poor repair.

Shoal Lake Day School.

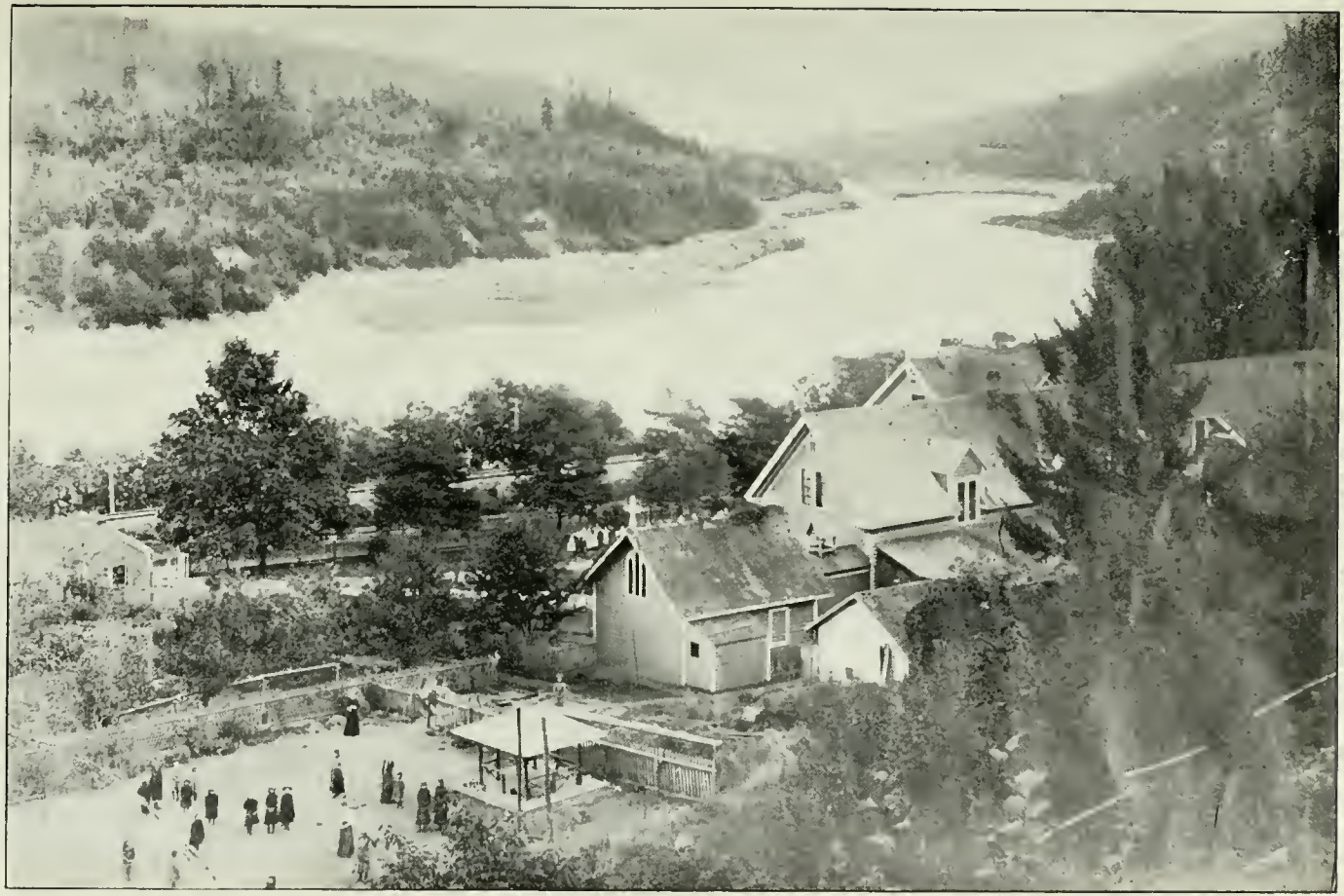
Louis Cochrane, teacher. Owing to an outbreak of small-pox on the reserve, the school had to be closed in April last, and had not been reopened at the time of my visit. The teacher is a half-breed, and has been employed in teaching for a number of years. He is a most excellent man among the Indians and very useful in this respect. The school is held in a rented building, and is fairly comfortable.

General Remarks.

There are two other day schools in the agency, namely, Moose Lake and Grand Rapids. The former was without a teacher at the time of my visit. Owing to lack of time, I did not get to Grand Rapids.

I have, &c.,

S. R. MARLATT,
Inspector of Indian Agencies.



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All Hallows' Boarding School, Yale, B.C.—View of the School from the Playground.

MANITOBA SUPERINTENDENCY,
NORWAY HOUSE BOARDING SCHOOL,
NORWAY HOUSE—KEEWATIN,
BERENS RIVER P.O., Man., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my second annual report of the Norway House boarding school for the year ended June 30, 1902.

Location.—The school is situate on the reserve at Rossville village and commands a fine view of the lake.

Land.—The area of land in connection with the school is not known and at present has not been surveyed. About three and a half acres is under cultivation and more is being cleared.

Buildings.—The school-building is frame, built on a stone foundation and is two stories high with basement, containing three cellars. On the first floor are ten rooms viz., principal's office, sitting-room and bed-room, girls' and boys' play-rooms, dining-room, assistant principal's room, kitchen and two store-rooms.

On the second floor are five rooms: two dormitories, sewing-room and two bed-rooms for members of the staff. There is also one outbuilding used as a store-room and a small stable used for the cows. The erection of an outbuilding to be used as a kitchen, also a much larger stable, is in contemplation.

Accommodation.—There is accommodation for fifty-eight children and a staff of five.

Attendance.—The attendance has been satisfactory in every way and a rule has been made that each child must attend school at least three and a half hours per day.

Class-room Work.—The course of studies authorized by the department has been adhered to as much as possible, and during the year very marked progress has been made in English, reading, writing, arithmetic, drawing, history and especially in general deportment.

Industries Taught.—The girls assist with the housework, such as scrubbing, washing, ironing, baking, and under the careful oversight of Miss Riley, seamstress, are developing into really accomplished needlewomen, knitters and menders.

The boys assist with both the outside and inside work, but as they are mostly small, they are really unable to do very heavy work. They fetch and carry all the water needed, see to the wood, and render all help they can in the gardens.

Gardens.—As far as the gardens are concerned, I am afraid owing to the very cold season we have had, the crops will to a very large extent prove a failure.

Moral and Religious Training.—Morning and evening prayers are held daily. The pupils attend church twice on the Sabbath and in the evening a short Sabbath school is held.

Health and Sanitation.—The health of the pupils is fairly good. During the past year there have been no deaths. This alone speaks volumes for the care the children are receiving. On the staff we have an experienced trained nurse, also a medical man.

Water Supply.—An abundance of good pure water is close at hand in the lake.

Fire Protection.—Three barrels are kept constantly filled with water, we also have a liberal supply of axes and pails always at hand.

Heating.—The building is heated throughout by two (Economy) furnaces. The fuel used is wood.

Recreation.—The boys and girls are allowed outside as much as possible and amuse themselves with skipping, swinging, football and other games known to Indian children. They very soon tire of a new game and are constantly demanding something fresh. Inside the building they give themselves to all manner of games, also singing, in which art they are most efficient and well repay one for any little effort put forth in that direction.

General Remarks.—In closing my report I would say that during the past year there has been a marked improvement in English and as far as the general conduct of the children has been concerned it has been fairly good.

I wish to bear the strongest testimony to the very efficient work done by the members of the staff, and the department and also the church is to be congratulated upon the loyal and devoted work done by the members of the staff in the interests of the children during the past year.

I think it only right to bring to your notice the fact that as far as education on this reserve is concerned the Indians do not seem to appreciate as they ought what is being done for their children, and in many cases their influence is decidedly against the interest of the school.

I have, &c.,

E. F. HARDIMAN, *Principal.*

PROVINCE OF MANITOBA,
PINE CREEK SCHOOL, R.C., July 2, 1902.

The Honourable ,
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to forward the annual report required on matters connected with the school under my charge for the year ended June 30, 1902.

Location.—The Pine Creek boarding school is situated on the west side of Lake Winnipegosis, at the mouth of Pine creek and on the limits of the Indian reserve. Our nearest post office is Winnipegosis.

Land.—The boarding school of Pine creek is situated on a piece of land comprising one hundred and sixty acres, belonging to the Roman Catholic mission. There is no land granted by the government for school purposes.

Buildings.—The school-house is a stone building, 114 x 45 feet. There are two stories, besides the basement and attic.

In the basement is situated the kitchen, 22 x 16 feet; the refectory, 46 x 15 feet; the wash-room, 30 x 29 feet; the store-room, 30 x 15 feet; the dairy, 22 x 13 feet; and the cellar, 34 x 22 feet.

In the first story is a class room for the boys, 23 x 20 feet; class-room for the girls, 23 x 20 feet; recreation-room for the boys, 23 x 22 feet; and a recreation-hall for the girls, 22 x 23 feet.

In the second story is the infirmary for the boys, 17 x 15 feet; infirmary for the girls, 17 x 15 feet; and a sewing-room, 20 x 15 feet.

In the attic are situated the dormitories. The boys' is 49 x 45 feet; and the girls', also of the same size; and two rooms for overseers, 15 x 14 feet each.

The rooms for the principal and the employees are in the first and the second stories.

Besides, there are the stables, carpenter's shop, carriage and implement-shed.

Attendance.—The attendance in class is generally very good.

Class-room Work.—The work of the children during class hours is very satisfactory.

Farm and Garden.—We have about six acres of potatoes, and two acres of oats. In our garden we have onions, carrots, cabbages, pease, beans, lettuce, tomatoes, &c.

Industries Taught.—The boys are taught light housework, the care of stock, and farming.

The girls are taught sewing, knitting, cooking, dairying and the care of poultry.

Moral and Religious Training.—Every day the children devote one hour to moral and religious training.

Health and Sanitation.—The children having good and substantial food, good exercise and pure air, are in very good health.

Water Supply.—A pump, run by a gasolene engine, draws the water required for school purposes from the river.

Fire Protection.—We have in the building three fire-extinguishers and four hose which can be attached to tanks.

Heating.—Our steam furnaces are running very well, and keep the building in a warm condition.

Recreation.—There are two play-rooms, 23 x 22 feet each, and two playgrounds, one acre and a half each, with shade-trees and supplied with benches.

I have, &c.,

P. BOUSQUET, O.M.I.,
Principal.

PROVINCE OF MANITOBA,
PORTAGE LA PRAIRIE BOARDING SCHOOL,
PORTAGE LA PRAIRIE, July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to forward my annual report for the year ended June 30, 1902.

Location.—This school, which is not situated on a reserve, is about a quarter of a mile east of the town of Portage la Prairie, which is its post office address.

Land.—In connection with the school are two acres of land. This land is in the corporation of the town of Portage la Prairie on the east side of the town and is owned by the church.

Buildings.—The building is of frame, on a stone foundation.

Accommodation.—The school can easily accommodate forty children and a staff of three.

Attendance.—The average attendance was twenty-two. Some of the pupils were too young to draw the grant.

Class-room Work.—Good progress has been made by both boys and girls.

Farm and Garden.—One acre is used for a garden; the other acre is divided into two playgrounds, one for the boys and one for the girls.

Industries Taught.—In the house the girls have been carefully trained in habits of neatness and industry in the kitchen and laundry, also in sewing and general housework. The boys are employed in cutting wood, gardening, carpentry and any other work which they are able to do.

Moral and Religious Training.—An hour in the morning and one in the evening is devoted to religious instruction. The conduct of the children is good and corporal punishment is not necessary.

Health and Sanitation.—The health of the children has been good. The ventilation is good.

Water Supply.—There is a good well which is amply sufficient for the needs of the school. There is also a soft-water tank in the basement, which is not more than half large enough.

Fire Protection.—There are a number of exits should fire occur. We have two chemical engines and one axe. There are no ladders or buckets.

Heating and Lighting.—The school is heated by hot air and is lighted throughout by electricity.

Recreation.—The girls have many games in summer and skating in winter. The boys have football, baseball, skating and athletic sports. The large girls and boys spend much of their spare time at lawn tennis.

I have, &c.,

W. A. HENDRY,
Principal.

MANITOBA SUPERINTENDENCY,
RAT PORTAGE BOARDING SCHOOL,
RAT PORTAGE, ONT., July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my report on the Rat Portage boarding school for the year ended June 30, 1902.

Location.—This school is situated south of the town of Rat Portage on the shores of the Lake of the Woods, and is distant about two miles from the Canadian Pacific Railway station.

Communication with the town of Rat Portage is mainly by water in summer, as a deep inlet separates the property from the town limits. The shore around is mostly abrupt and high, but the school is situated on a terrace-like incline, and the eye is regaled with charming scenery during the summer season. The school is under the auspices of the Roman Catholic Church, and is placed under the patronage of St. Anthony of Padua.

Land.—There are fifty acres of land in connection with this school, the property of the Roman Catholic mission; it is properly described as sub-division 1-8, township of Jaffray.

Much of the land is rock, but fertile strips stretch out here and there, and furnish sufficient soil for gardening purposes.

Buildings.—The school-buildings are of frame construction, with brick veneer. The foundations are of stone. The interior is plaster finish, except the ceilings, which are of wood. The main building is 36 x 30 feet, three stories high, with an extension at the south end, 36 x 26 feet, two stories high. Besides there is a lean-to kitchen attached to the rear of the main building, 16 x 14 feet.

The other buildings are: cottage, 20 x 16 feet, with lean-to, 14 x 12 feet, resting on stone foundation; it contains a hall and three rooms, and is the principal's residence;

workshop, 22 x 16 feet, resting on stone foundation; storehouse and laundry (under one roof) 48 x 18 feet; stable and carriage-shed (under one roof) 46 x 18 feet; wood-shed, 20 x 12 feet; and log house, 18 x 14 feet, for the use of visiting Indians.

Accommodation.—There is accommodation for thirty-five children and a staff of five, distributed as follows:—girls' dormitory, on upper flat of main building, 36 x 30 feet, less apartment for assistant matron. On second floor are: sewing-room, girls' recreation-room, and Sisters' private apartments, four rooms in all.

The ground floor comprises: hall, office, private dining-room, children's dining-room and pantry.

The extension has three rooms on the first floor, viz.: class-room, chapel and boys' play-hall. The upper flat of extension is the boys' dormitory, 36 x 26 feet, including room for monitor.

The house is well furnished on the whole; the dormitories have iron beds, and the class-room is well equipped. There being only one class-room available, it is necessary to take the boys and girls to class at alternate hours.

Attendance.—The register shows an attendance of thirty children (the number allowed by the department) but the actual attendance is somewhat in excess of that number.

Class Work.—The class work extends over three standards and conforms to the prescriptions of the department. Great pains are taken to explain the lessons to the children and to familiarize them with English composition. The boys are particularly successful in English.

Farm and Garden.—Three acres of land are at present under cultivation and furnish us our supply of vegetables for the year.

Industries Taught.—The garden furnishes considerable occupation for the boys during the summer season. They are taught the art of preparing the soil, of planting and attending to plants. The winter work is mainly limited to providing wood and water. The girls are trained in the art of general housekeeping; also in laundry work, sewing, cooking and baking.

Moral and Religious Training.—As is proper, the moral and religious training of the pupils receives special care; it is also our main source of consolation; respect for authority and obedience is continually inculcated and insisted upon. A certain time every day is devoted to Christian doctrine, and morning and evening devotions are attended in the chapel.

Health and Sanitation.—The general health of the school has been good during the year, barring an attack of measles last spring, but there were no fatal results. Scrofula is the main ailment we have to contend with, and which seems to find more favourable conditions for development in school life than in the open air life of the reserve.

The food-supply is wholesome and abundant; besides the three regular meals the children are given a substantial lunch in the afternoon.

Cleanliness of person is insisted upon, and ventilation well attended to.

Water Supply.—The water is supplied from the lake and is hauled to the house by horse and cart; it is not very palatable during the hot season.

Fire Protection.—Three Dominion fire-extinguishers are kept at convenient places on the different flats. Ladders are at hand around the premises. There are practically two exits from every part of the house.

Heating.—The building is heated throughout by hot-air furnaces. There is a box-stove in the boys' hall. Wood is used exclusively for fuel.

Recreation.—One hour is allowed for recreation at noon, and the same in the evening. In the summer an extra half hour is granted in the evening. Skating and coasting are the boys' principal amusements in winter; boating is their favourite pastime during the summer season.

General Remarks.—I beg to acknowledge the courtesy of our inspector, Mr. L. J. A. Leveque, in all our dealings with him, and to thank him for the interest he takes in the school.

I notice there is much more of a home spirit growing among the children, in that lonesomeness is banished, and a real attachment formed for the school. The general good behaviour has considerably improved during the past year, and the burdens of those in charge have thereby become proportionately lessened.

I have, &c.,

CHAS. CAHILL, O.M.I.,
Principal.

PROVINCE OF MANITOBA,
BRANDON INDUSTRIAL SCHOOL,
BRANDON, July 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902.

Location.—The Brandon industrial school is a non-reservation school situated three miles northwest of the city of Brandon, about the centre of the hill that once formed the bank of the Assiniboine river. The view looking over the experimental farm to the city of Brandon is a beautiful one.

Land.—The east half of section 28, township 10, range 19, constitutes the farm of three hundred and twenty acres, which belongs to the school. About two hundred and twenty acres of the half section is in the beautiful valley of the Assiniboine, most of which is well adapted for agriculture and garden purposes. The rest of the farm is suitable for grazing.

Buildings.—The main building is three story, brick-veneered, with a frontage of one hundred and two feet. The other buildings consist of the principal's residence, farmer's residence, carpenter's residence, barn and stables, piggery, carpenter-shop, hennery, ice-house, and two root-houses.

Accommodation.—There is ample accommodation for one hundred and twenty-five pupils, and all the members of the staff.

Attendance.—The average attendance has been one hundred and four, and the attendance in the school-rooms and on duty has been good.

Class-room Work.—The half-day system is followed, with quite a few exceptions among the smaller pupils who attend school all day, especially during the winter months. During the year excellent progress has been made. The programme of studies authorized by the department is adhered to. The pupils are graded as follows :—

Standard I	40	pupils
" II	14	"
" III	14	"
" IV	23	"
" V	3	"

and five are not graded.

Farm and Garden.—We give great attention to these departments, believing that from the land and stock-raising, the red man must make his livelihood. We have a

garden of three acres and about two acres of small fruits, from which we are endeavouring to teach in a practical way that these fruits they roam the country for can be had in better quality and with less labour at their own door.

We have under cultivation one hundred and twenty-six acres with acreage of crop as follows :—

Wheat, fifteen acres ; oats, thirty-seven acres ; barley, six acres ; brome grass, five acres ; rye, one acre ; corn, seven acres ; potatoes, eight acres ; turnips and carrots, five acres ; garden, five acres ; summer-fallow, twenty-two acres, and meadow, fifteen acres.

The remainder of one hundred and ninety-four acres is uncultivated, and most of it well adapted for pasture.

About three acres of wheat and thirteen acres of oats were destroyed by the June floods.

Industries Taught.—The boys are taught farming, gardening, care of stock, carpenter-work, and such other duties as will aid them in solving the practical problems in connection with the duties of their after-life. The girls are taught cooking, laundry, sewing and general housework. Thoroughness is insisted on in every department, quality always being worth more than quantity.

Moral and Religious Training.—Sabbath morning all the boys and as many of the girls as can be taken attend the service in the town.

Sabbath school is held every Sabbath afternoon, where each member of the staff has a class ; preaching service in the institute every Sunday evening,

All departments are closed on Saturday afternoon, and preparation is made for a proper observance of the Sabbath. On Sabbath morning a clean child puts on clean clothes, clean boots—an object lesson, a clean day—and such lessons tend to help the children to lead a clean life.

Health and Sanitation.—The school physician, Dr. Fraser, has been faithful in his attendance, and special attention has been given to the physical well-being of the pupils. During the year one boy and three girls have died. Two boys have been sent home on account of ill health. All of the six were afflicted with the dread disease —consumption.

Water Supply.—There is an abundant supply of good spring water pumped by a windmill from the well on the hillside into two large tanks at the top of the building, and thence by means of pipes it is carried to all important parts of the main building. The system gives good satisfaction except in very calm weather. Hot water is suplied by means of a water-heater in the basement.

Fire Protection.—Some small chemical extinguishers are on hand. Fire-buckets are kept full of water at important points. Hose is attached to our water-works. Our main protection is a large McRobie engine in the basement with a drum on each flat, with sufficient hose to reach all parts of the same.

A fire-escape is provided from each of four large dormitories.

While our main building is well protected, we have no protection for all other buildings.

Heating and Lighting —The building is heated by hot air. Three large wood and two coal furnaces are kept going during the cold weather, and they give excellent satisfaction. With care, frost seldom finds its way into any part of the main building.

The main building, principal's residence and the barn are lighted by electricity supplied from Brandon. The system is very convenient and safe.

Recreation.—The favourite outdoor sports are football, baseball, croquet, marbles, skating and sleighing. We have a large play-room for the girls and one for the boys, where checkers, forte, crokinole, Indian clubs, dumb-bells and reading are all greatly enjoyed.

General Remarks.—The institution is made as homelike as possible, and, with a kind, properly qualified and efficient staff, we are endeavouring to educate and train the children for that time when they will have to take their places in the body politic and solve the practical problems of life, teaching them that they have the same right as the white man to make men of themselves, to live a clean, honest life, and there their rights end.

About eight hundred visitors have signed our roll during the year and this represents only about one-third the number of those who visit the farm.

In closing, I wish to express my thanks to the various officers of the Missionary Society of the Methodist Church and those of the Indian Department, for their uniform courtesy and friendly spirit toward the principal and his staff during the past year.

I have, &c.,

T. FERRIER,
Principal.

PROVINCE OF MANITOBA,
ELKHORN INDUSTRIAL SCHOOL,
ELKHORN, August 7, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I herewith have the honour to submit my annual report for the year ended June 30, 1902.

Location.—The new home, which we have occupied since September 7, 1899, is situated about one-quarter of a mile from the town of Elkhorn, and stands in about the centre of what was formerly known as the 'Gore,' a level piece of excellent turf, some forty-two acres in extent, bounded on the north by the Canadian Pacific railway main line, on the south by the public road allowance. West of this, and immediately adjoining it, lies our farm of three hundred and twenty acres, being the southwest quarter of section four, and southeast quarter of section five, township twelve, range twenty-eight, which contains excellent pasturage and wheat-land. This land is owned by the Dominion government.

Buildings.—These comprise the main building, laundry and gymnasium, which last contains the carpenter, paint and shoe-shop, having been fitted up in the month of August, 1900; horse and cow stables, root-house, coal-shed, boys' and girls' outhouses. There is also a small frame building covering the pump and sewage tank. Connected with this is a windmill used in emptying the tank.

The department erected during the year a house to be used as principal's residence, comprising eight rooms and basement. It is 26 x 32 feet; height above ground 23 feet. A granary has also been erected, 28 x 32 feet.

Accommodation.—There is accommodation in the school for one hundred pupils, and fifteen of a staff.

Attendance.—There is an increase in the attendance over last year, but we have not yet reached our complement of pupils.

Class-room Work.—In this department the work is very satisfactory, marked progress having been made during the year. Mrs. Wilson gave a handsome silver medal to standard VI; the competition to take place at midsummer, the required number of marks being fifty per cent on each subject, and eighty per cent on the whole; out of the seven pupils in standard VI four were eligible for the medal, which was won by Samuel Pratt, of Touchwood hills, whose percentage was remarkably high. The examination papers were very difficult, but the work done was splendid. Great praise is due Miss Marks for bringing the work in the class-room to its present standard of excellence.

Farm and Garden.—The crops harvested last autumn were very satisfactory. There were one thousand bushels of wheat, eight hundred of oats, four hundred and fifty of potatoes and five hundred bushels of turnips and mangolds.

This year there are seventy acres in wheat, thirty in oats and barley, four in potatoes, three in turnips and mangolds and one acre in other vegetables. There are thirty-five acres in summer-fallow. The prospect of a bountiful harvest is very good, as the crops are looking splendid.

We are encouraging the boys to take up agriculture, as we feel that this is the most important industry that can be taught them.

Industries Taught.—The boys are instructed in carpentry, painting, bootmaking, baking farming and gardening. A number are also constantly employed in the general work about the institution, and in keeping the grounds in order.

The girls are taught cooking, housework, laundry work, dressmaking, plain sewing, knitting and crocheting. They perform all the necessary household duties, in all of which they show great aptitude.

Moral and Religious Training.—Prayers are held morning and evening. On Sunday the pupils attend St. Mark's church. Sunday school is held in the institution for the junior pupils, the seniors attending St. Marks. A weekly Bible class is held in the school. There are a number of communicants and many of the pupils are deeply interested in religious matters. The conduct of the pupils has been good. Punishments are of rare occurrence.

Health and Sanitation.—During the year the health of the pupils has been satisfactory. I am again thankful to say that only one death occurred in the institution during the year.

The drainage has not been satisfactory of late. The department is now looking into the matter, with a view to making the necessary changes. There is a large tank at considerable distance from the main building, into which the sewage is carried from the bath-rooms, kitchen and laundry; this is pumped out with the windmill on the open prairie. The outhouses for boys and girls are erected at a safe distance from the school-building, so that any danger from defective sanitation from this source is removed.

Water Supply.—It has been found necessary to put in a new well at some distance from the main building, as the present one is inadequate.

Fire Protection.—All fire-appliances are in good order; the McRobie fire-extinguisher is placed in the building. Besides this there are a number of patent fire-extinguishers and fire-axes.

Heating and Lighting.—The heating is done by a system of hot water. The school is lighted by coal-oil lamps. The department put in a gasoline lighting plant; but this was so unsatisfactory that instructions were received to di continue using it.

Recreation.—All athletic sports are encouraged. Football continues to be the most popular game in summer. The boys won the 'Middleton Cup,' again this year. The cup has now become the property of our club, it having won it now two years in succession. In winter the boys have the gymnasium, which is fitted up with a number of appliances, from which they derive much amusement. This year the larger girls and boys are very much interested in tennis. We have a very good cinder court. The smaller girls have swings, croquet, balls and hoops, with which to amuse themselves. The chief amusement in winter is skating.

General Remarks.—This has been a quiet uneventful year. The work has gone steadily on and marked progress has been made in all the various branches.

The Hon. David Laird visited the school in July. He is always a welcome visitor and both staff and pupils feel encouraged by his wise and helpful advice. Senator Vidal and daughter, of Sarnia, visited us in August; they were delighted with the school. The Senator in an address to the pupils expressed his pleasure in the most glowing terms.

We were disappointed that the royal train passed here at midnight, as it stopped for water, and we had hoped to have had an opportunity of giving the Duke and Duchess of York a hearty and loyal welcome from the school. Mrs. Wilson and several of the senior pupils, however, met the train and took with them some specimens of pupils' work, also several copies of magazines containing articles descriptive of the Indian work here. Her Royal Highness graciously acknowledged the above and stated that she was very sorry not to have been able to see the pupils.

Archdeacon Phair, superintendent of Indian missions, visited the school twice during the year and was much pleased with the work.

The Rev. Arthur Murphy, M.A., of Toronto, held a short mission in Elkhorn. While here he and Mrs. Murphy were guests of the school. This was their first real insight into Indian work. They were most interested in every thing in connection with the institution. The pupils enjoyed Mr. Murphy's services very much, and he was indeed glad to find them taking such a deep interest in spiritual matters. But truly these are the things, after all, which do most to develop and strengthen the character of our pupils.

It is with thankfulness to God for many blessings vouchsafed to us through another year that I bring my eleventh annual report to a close.

I have, &c.,

A. E. WILSON,
Principal.

PROVINCE OF MANITOBA,
RUPERT'S LAND INDUSTRIAL SCHOOL,
MIDDLECHURCH, August 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report on the affairs of the Rupert's Land industrial school for the year ended June 30, 1092.

Since May 1, I have had charge of this school pending the appointment of a principal *vice* Mr. J. G. Dagg, whose resignation took effect on that date.

Location.—The school is situated on the left bank of the Red river, about six miles below the city of Winnipeg, and a quarter of a mile from the Middlechurch railway station.

Land.—The land in connection with the school is about four hundred acres in extent, and consists of a river lot eighteen chains in width, and running back four miles to the westward. The soil is fertile but particularly stubborn of cultivation. About three hundred acres are fenced and divided into fields. A public road runs along the entire length of the farm on the south side, a great convenience in reaching the remoter fields. At about forty rods from the buildings the farm is crossed transversely by the main road between Winnipeg and West Selkirk, and about forty rods further west by the branch of the C.P.R. running between the same points.

Buildings.—The main building is of solid brick on stone foundation; the basement containing the furnaces and pumping engine. The other buildings are of frame, for the most part also on stone foundations. A principal's residence has been completed, and preparations are being made for the erection of a new cow-stable and root-house and the fitting up of a commodious piggery. The basement and other portions of the main building require to be renovated, a work which will be undertaken during the winter when only indoor work can be prosecuted with advantage.

Accommodation.—The school affords accommodation for sixty-five boys and fifty girls, or a total of one hundred and fifteen pupils, besides the members of the staff, of whom only eight are resident.

Attendance.—During the year eight pupils were admitted and twenty-three discharged by authority of the Commissioner. On June 30, the number enrolled was one hundred and twenty-two. Many of these, however, were absent during a great

part of the year, while upwards of twenty were in attendance who were not at that time regularly admitted as pupils, and consequently are not included in this number. The attendance is drawn from the following districts :—

St. Peters	69	pupils.
Fisher River	17	"
The Pas	15	"
Lac Seul	6	"
Rainy River	5	"
Fort Alexander	5	"
Moose Factory	2	"
Rat Portage	1	"
Grand Rapids	1	"
Brokenhead	1	"

Class-room Work.—Two duly qualified teachers have had charge of the class-rooms. The prescribed programme of studies is but slightly departed from. The junior division, consisting mainly of pupils under twelve years, who attend classes full time, that is, six hours daily, have made good progress. Those over twelve attend only half-time, one half of each day being spent at their trades ; but owing to absence from school and other interruptions, several of these are quite backward in their studies. The grading of the pupils enrolled for the June quarter was as follows :—

	Boys.	Girls.	Total.
Standard I	13	10	23
" II	14	9	23
" III	12	4	16
" IV	28	15	43
" V	10	7	17

Nearly all the pupils from St. Peter's reserve are able to speak English on entering school. The rest also are now with a few exceptions able to express themselves readily in English.

Farm and Garden.—The land under cultivation comprises one hundred and three acres and is utilized for the present season as follows :—

Oats, thirty and a half acres ; barley, twenty-four acres ; speltz, fourteen acres ; flax, one acre ; summer-fallow, eighteen acres ; timothy and brome, seven acres ; potatoes, four and a half acres ; turnips, one and a half acres ; half an acre of carrots ; half an acre beets ; half an acre of onions ; half an acre of cabbage ; one quarter acre of pease and beans, and one quarter acre of other vegetables.

Though the seeding was extremely difficult on account of constant rains, and the crops in the flat places have suffered slightly from this cause, yet on the whole the season is proving a favourable one, and the yield of all kinds of farm and garden produce promises to be good. Of the land belonging to the school about three hundred acres are fenced, and within this area an abundant supply of hay has again been procured.

Live Stock.—The live stock consists of six horses, twenty-one head of cattle and seventy-five pigs.

Industries Taught.—The boys are taught farming, gardening, the care of stock, carpentry and painting : instruction in tailoring and printing has been discontinued. The blacksmith's shop is maintained on account of its value in the economy of the institution, but instruction in blacksmithing is given only to two or three of the more robust of the senior pupils. The girls are taught all the usual branches of housekeeping, including cooking, baking, dairying, sewing and laundry work.

Moral and Religious Training.—All the pupils attend divine service on Sunday, morning and evening, at St. Paul's church. Instruction in Scripture is given on Sunday afternoon and on each school day during the week. The International series of lessons is followed, and the catechism, the commandments, the creed and an outline of

Bible history are carefully taught. Every means is employed, both by formal instruction and by the watchfulness and special influence of the officers, to inculcate moral principles, and to counteract the tendencies, inherent to a greater or less extent, to covetousness, falsehood and profanity. In these efforts we cannot, and do not, claim complete success. In many instances the conduct of our pupils is highly creditable: in a few it is quite otherwise.

Health and Sanitation.—During the past winter the school was visited by an epidemic of typhoid fever and afterwards by measles, and some of the weaker constitutions succumbed to the effects of these diseases in spite of much care and nursing. It is probable the fever was due to a defective system of sewerage or to impure water or to both, and an effort is being made to remedy the evils, at least temporarily; but much additional work and expense will be incurred before the main building and its surroundings are in a thoroughly sanitary condition.

Water Supply.—The water for domestic purposes has been supplied from two wells. One of these has been condemned, and the other is unfavourably located beneath the main building. The two have in consequence been abandoned and replaced by one satisfactory well of large capacity situated adjacent to the power-house, where the pumping is done by the gasoline engine. This well also supplies the laundry and renders the whole system of water-supply more simple and more efficient.

Fire Protection.—Our appliances for fire-protection consist of a McRobie chemical fire-engine, several chemical fire-extinguishers of different makes, a large number of hand grenades, a dozen fire-buckets and as many fireman's axes. These are conveniently distributed throughout the buildings, and the officers of the school as well as all the larger pupils are instructed in the use of them. But our chief reliance is placed in the water-tanks situated in the third story, of a capacity of three thousand gallons, and connected by pipes and hose with all parts of the main or residence building.

Heating and Lighting.—The heating of the main building is effected partly by hot air furnaces and partly by hot water, while the school-rooms are heated by stoves. The operation of this irregular system is expensive and unsatisfactory. The electric plant has furnished most satisfactory lighting. The gasoline engine has proved a very convenient and highly efficient power for the purposes of the school, though somewhat expensive. The material consumed in running the engine for a year has cost $650, but this has afforded power not only for lighting but for sawing and for the crushing of grain. The cost of lighting alone would be slightly over $500.

Recreation.—Outdoor games of various kinds are engaged in. On Saturday afternoons in summer the pupils, under the direction of members of the staff, are frequently allowed to take a walk through the beautiful groves along the banks of the Red river.

Military and fancy drills are practised to a limited extent, the commodious drill hall being utilized for this purpose, when the temperature or the condition of the atmosphere prohibits outdoor exercise. The band is this season under the direction of one of the pupils, Roderick Spence, a boy of sixteen years, whose ability and perseverance in this matter have been the subject of much well deserved praise. The boys have made fair progress, and it is felt that what they have attained under these conditions will be of more permanent value to them on account of the almost unaided effort they have put forth.

General Remarks.—The present aim in the management of the school is to introduce strict economy, to dispense with all that is superfluous and to promote efficiency in what is essential. With this end in view, the matters that are receiving chief attention are those that relate to the comfort and well-being of the children, and to their mental, moral, and religious training. The class work is now being re-organized under competent teachers in a manner that cannot fail to produce excellent results.

Profitable employment is found in the city of Winnipeg for many of our ex-pupils, and several of them, both male and female, are acquitting themselves creditably and earning a good rate of wages.

I have, &c.,

W. J. CHISHOLM,
Inspector of Indian Agencies, Acting Principal.

PROVINCE OF MANITOBA,
ST. BONIFACE INDUSTRIAL SCHOOL,
ST. BONIFACE, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR.—I have the honour to submit my annual report for the year ended June 30, 1902.

Location.—The St. Boniface industrial school is situated within the city limits of St. Boniface, two miles from Winnipeg.

Land.—About forty acres is all the land owned by the school; this is divided into four patches: two fields containing about seven acres are under cultivation, the remainder being used for pasture, recreation-grounds and waste land unfit for anything

Buildings.—The main building is in fair condition, also the stables and shops. The root-house needs rebuilding, as the sides are caving in. A snall shed was built last summer to store the agricultural implements, 14 x 16 feet.

Accommodation.—There is no accommodation (to speak accurately) for the members of the staff. The accommodation given to them at present has been taken away from the children. The girls' infirmary is used by the lady teacher; and one of the two rooms for senior classes had to be divided into apartments for the men. The bed-rooms for the disciplinarians in the dormitories are too small, their area being 14 x 6½ x 6¼ feet. The boys' dormitory contains fifty-seven beds; the girls', forty-six.

Attendance.—In spite of all efforts to recruit pupils, our number has been decreasing. In August of last year some children were brought from Nelson river and its surroundings. More children could be secured from there, but I have refused to accept them, travelling expenses being so great and all the children under ten years of age. I have had many children offered to me from non-treaty half-breeds residing in the vicinity of reserves, but of course could not accept them.

Class-room Work.—The authorized programme is followed; general progress very fair, especially in English. The boys are given drill and calisthenics daily; also band practice, of which they are particularly fond.

Farm and Garden.—Our small acreage of crop last year was ruined by hail just as it was ripe enough to harvest, therefore the yield was not sufficient for the stock. From the garden we had a fair crop of vegetables and plenty of potatoes for the wants of the school. No little inconvenience is felt by having no hay-lands, we are obliged to get our hay from a distance, which involves expen-e as well as loss of time.

Industries Taught.—There is no other industry than a little farming taught the boys with the exception of carpentry, which consists of making repairs around the house and premises. The girls are taught all things about housekeeping and making and mending clothes.

Moral and Religious Training.—Religious instruction is given daily in school and every Sunday by the principal, also morning and evening prayers.

Health and Sanitation.—The general health of the children has been good (better than in other years.) Measles broke out in the spring and we lost one little girl.

A ventilator has been added to the closets in the boys' dormitory, making a marked improvement.

Water Supply.—The water is good and plentiful, being pumped up from a well under the house and stored in big tanks at the top of the house. During the severe cold of the past winter the traps in the coal-shed were accidentally left open one night

the consequence was that our hot-air pumping engine froze and burst. As it could not be repaired in time, I replaced it with a two and a half horse-power gasoline pumping engine. The change is so much for the better that I am tempted not to feel sorry that the accident happened. The tanks are now very quickly filled.

Fire Protection.—We have the McRobie fire-apparatus, with two hundred feet of one inch rubber hose; six Dominion fire-extinguishers, six fire-axes and twelve buckets.

Heating and Lighting.—The hot-water system gives good satisfaction, but it is very expensive, coal being so dear.

In January, 1900, I installed an acetylene gas plant, and we are very much pleased with it. There is less danger than with lamps, and after it has once been installed is hardly as expensive as coal oil.

Recreation.—The playgrounds are large and separated, one being on each side of the house: also two recreation-halls opening on to the playgrounds. The children all look bright and happy and enjoy their play-time with the usual frolics and games.

General Remarks.—Our dormitories now look very inviting. Last fall we did away with the stretchers and had them replaced with white iron bedsteads, which are in every way a very great improvement on the old style.

In conclusion I wish to thank the department for kindness shown to us during the past year.

I have, &c.,

J. B. DORAIS,
Principal.

PROVINCE OF MANITOBA,
LAKE WINNIPEG INSPECTORATE,
WINNIPEG, October 4, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to state that I inspected the schools of the Clandeboye agency several times during the year, and found them generally efficiently conducted by the various teachers in charge; but the attendance at the schools was small owing to the prevalence of small-pox and diphtheria on the reserves, and the parents being engaged in lumbering, fishing and other occupations which necessitated their leaving home with their children; besides a large number of their children are taken away from the reserves and placed in the different industrial schools in order to receive the education and manual training which it is impossible to receive upon the reserves.

ST. PPETER'S BAND.

The South St. Peter's Protestant school is taught by Miss Isabel Jackson, who is an excellent teacher and advances her pupils in reading, spelling, dictation, writing, arithmetic and geography, considering the disadvantages under which she labours, owing to the irregular attendance of her pupils; as there are thirty eight children who should attend, whereas the number of pupils varies from thirteen to thirty-one.

The Roman Catholic school on St. Peter's reserve was taught by Miss Alice Genthon, who was a painstaking and competent teacher and was educated in French and English at the convent at St. Boniface. The attendance at this school is very irregular, there should be eleven pupils, but frequently there are but four in school. These pupils

have made decided progress within the past year, they read fairly well, spell accurately words out of their lessons, aptly solve practical questions on the black-board, and their penmanship is very good indeed. Miss Genthon resigned as teacher of this school, and Miss Mary Fitzgerald, who was appointed in her place, May 12, 1902, experienced the same difficulty from irregular attendance as her predecessor, having only five pupils present during my last visit.

The East St. Peter's Protestant school is taught by Mr. R. S. Cushing, who is an active, energetic teacher and manifests an enthusiasm in his profession which electrifies his pupils and consequently his popularity and the attendance are increasing. He is most thorough and efficient in imparting instruction in reading, spelling, writing, arithmetic, geography and dictation. The attendance is generally very satisfactory and frequently all the pupils in the district are present.

The North St. Peter's Protestant school was taught by Miss McLean, whose pupils showed a familiarity with their lessons above the average. They acquitted themselves creditably in reading, spelling, writing and arithmetic during my visits of inspection. There should be an attendance of twenty-four at this school, but it varies from nine to fifteen, according to the parents' occupation.

The Muckle's Creek Protestant school is taught by Miss H. McKenzie, who is a model instructress. The pupils are so admirably taught in reading, spelling, arithmetic, writing, dictation and singing, that not a single word was mispronounced nor mis-spelled, and not a jarring note was heard. The teacher's kindness and goodness are visible in all her work, and she never has occasion to chastise her pupils. The attendance here should be twenty-five, but only about one-half that number attend school owing to the wandering habits of the parents.

Brokenhead River Band.

The teacher, Mr. Frederick McLean, conducted this school most efficiently for a number of years, and the progress of the children attending his school was very satisfactory in reading, spelling, writing, arithmetic and geography. The attendance should be sixteen, but it was seldom over twelve, as about one-half of this band are heathens, and take no interest in education. Mr. McLean resigned, and Mr. William Sweetman was appointed to fill the vacancy May 21, 1902.

Fort Alexander Band.

The Fort Alexander Roman Catholic school is taught by Mr. W. George Gow, who is a competent instructor. The children in attendance evinced considerable progress in reading, spelling, writing and arithmetic, but the parents are very negligent about sending their children to school, for out of sixty pupils who should attend, only about a quarter of that number are in school.

The Fort Alexander Protestant school is taught by Mr. Sydney B. Barrett. He was transferred from the Black River school to this one. He is well educated and conducts the school ably. The pupils are taught reading, spelling, writing, arithmetic and geography; but in consequence of irregular attendance they have not made as much progress as they otherwise would have, for out of the seventy-five children who should attend this school only about one third of that number do attend.

All of which is respectfully submitted.

I have, &c.,

E. McCOLL,
Inspector of Indian Agencies.

NORTHWEST SUPERINTENDENCY,
BIRTLE BOARDING SCHOOL,
BIRTLE, MAN., July 4, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the Birtle boarding school for the year ended June 30, 1902.

Location.—The school is situated within the town limits of Birtle in the province of Manitoba, and on the north side of the Birdtail creek, but is not on any reserve.

Land.—There are twenty-five acres of land belonging to the school and also the same area of rented land. It is situated in Birtle municipality in section No. 6-17-26. Unfortunately only a small portion of this land is suitable for cultivation owing to the hilly nature of the country. However, the most of it affords good pasturage, except during a dry year.

Buildings.—The school is a stone structure three stories high exclusive of basement. All departments of school and domestic work are in the same building. The barn is frame and has a stone stable underneath for stock. There is also a frame hen-house and log milk-cellar. Since last report some improvements have been made by lining the basements with matched spruce lumber and re-building a root-cellar of which the roof had caved in.

Accommodation.—The building is capable of accommodating at least sixty-five pupils and a staff of five.

Attendance.—The attendance during the year has been good, ranging from three to five above the grant-earning number, which is forty.

Class-room Work.—The pupils have shown a very gratifying amount of interest in their work, and wherever the new matter taught is made plain by connecting with something they already know, there is little difficulty in teaching them.

Farm and Garden.—Between five and six acres are planted with garden vegetables, potatoes, corn, turnips, beans and mangolds.

Industries Taught.—The girls learn sewing, washing, ironing, baking, cooking, dining-room work and all general housework. The boys learn the care of stock and poultry, provide fuel, plough, harrow and do all work connected with gardening. In addition they assist in what carpenter work is done and thus learn something of the use of tools.

Moral and Religious Training.—The children attend Sabbath school and church services in the Presbyterian church of the town of Birtle, and every Monday evening the pastor of the church has a meeting with them for religious instruction in their own school-room. In addition to this they have daily Bible-reading and instruction therefrom in religious truth besides the memorizing of passages of Scripture. Another powerful agency in moral training is the use made of every-day incidents in the lives of the pupils on their surroundings, from which valuable truths are drawn.

Health and Sanitation.—On account of the favourable situation the sanitary condition is good and the health of the pupils on the whole has been very satisfactory.

Water Supply.—Our drinking water has to be all drawn from a spring about a mile away. The water is good, but the drawing entails much labour. Except during a dry time, our two cisterns afford a good supply of soft water. Several unsuccessful attempts have been made to secure a well which would give a good water-supply.

New Comers, All Hallows' Boarding School, Yale, B.C.

Fire Protection.—We have four Patton fire-extinguishers and ten fire-pails hung in convenient places and filled with water. During the last month we erected a new iron fire-escape, which affords a ready means of exit from each wing in case of emergency. But in the winter, owing to our scarcity of water, the fire-protection is not so good as it ought to be.

Heating and Lighting.—The building is heated by three wood furnaces and light is supplied by coal-oil lamps.

Recreation.—In winter the chief recreation for both boys and girls is sleigh-riding and skating, and in summer football and baseball for boys, and skipping, baseball, &c., for the girls. Whenever the weather permits, the pupils spend as much time as possible out of doors.

General Remarks —As this is my first half year in my present position, the material for making out a report is much more scant than it would otherwise be.

I have, &c.,

W. McWHINNEY,
Principal.

NORTHWEST TERRITORIES,
ST. JOHN'S HOMES—BLACKFOOT RESERVE,
GLEICHEN, ALBERTA, July 26, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report of the St. John's homes on this reserve, in charge of myself as agent of the Church Missionary Society, for the year ended June 30, 1902.

Location.—The home is situated at the north reserve, known as Old Sun's school, and is almost in the centre of the largest village, and about four miles from Gleichen, on the Canadian Pacific railway. A few acres of land have been fenced off near the buildings, portions of which are under cultivation. The post office is Gleichen.

Buildings and Accommodation.—The school comprises two buildings—the boarding-school itself and a school-house. In the former we are considerably cramped for room, but we trust that the new home, contemplated by the government, will soon be erected and enable us to carry on our work efficiently. The school-house is well constructed and capable of accommodating fully twice as many children as the home itself. It is heated by a hot-air furnace, and is well ventilated. Behind the home is a frame-built laundry, containing well and pump, a cook-stove, stand and tubs for washing, and a brick chimney. The building is connected with the home by a wooden sidewalk.

Attendance.—The number of children on the roll at the close of the fiscal year was twenty-six boys and fourteen girls. There are many more children of school-age in the vicinity of this school than these buildings could accommodate, and we long to see them rescued from the ill effects of the camp life.

Class-room Work.—The children have continued to make very satisfactory progress in all their studies. The schedule given by the government has been closely followed.

Industrial Work.—This work is very progressive and encouraging. We have three large vegetable gardens and a very nice front flower garden with several trees and shrubs, in all of which a large majority of the boys are employed regularly every day. Besides this the children are engaged daily in the stable and housework, feeding and

grooming the horses, milking the cows, making butter and bread, mending and making clothes, laundry work, &c., besides all the general routine of house duties.

Moral and Religious Training.—Special attention is given to this side of the work. Prayers are held regularly night and morning, with instruction, and Sunday services together with Sunday school, and during a great part of the year week-day services and Bible classes are held twice a week, which the elder pupils attend. The children are very happy and in many cases are showing a true desire to live a good and moral life.

Health.—With the ample medical provision which we have, the general health of the children has been good, but will be much better, I hope, when we have larger accommodation.

Water Supply.—There is a good supply of water from the well in the laundry, supplied by the Bow river.

Fire Protection.—A number of fire-extinguishers and hand-grenades are placed in convenient places throughout the building, and buckets and tubs of water are kept where they can be easily got at in time of need. Axes are also kept ready for use. Fire-escapes outside the building are permanently connected with both the dormitories, and are easily got at in case of need.

Heating.—The boarding school is heated by stoves only, and the school-house by a hot-air furnace. Asbestos safes are in use.

Recreation.—Much attention is given to recreation, and the children are encouraged to be as much as possible in the open air. They are taught to amuse themselves with a variety of games, and we endeavour to oversee and guide all their recreation.

General Remarks.

In closing, I would like to express my high appreciation of the very valuable help rendered us in our work by our Indian agent, Mr. Markle.

I have, &c.,

STANLEY J. STOCKEN,
Principal.

Northwest Territories,
Blood C. E. Boarding School,
McLeod, Alta., July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to foward my annual report for the fiscal year ended June 30, 1902.

Location.—Our school is located immediately west of the agency headquarters and off the reserve, the Belly river flowing between, and is some thirteen miles southeast from McLeod. We own the northwest quarter of section thirty, township seven, range twenty-four, west of the fourth meridian. Our land, which was, I believe, purchased by the Church Missionary Society, is all fenced. About twenty acres are under cultivation, four of which are garden and about other four or five are occupied by the building and playgrounds. The soil is fairly good and produces good crops of vegetables and oats, and with the proper amount of water is good profitable farming land.

Buildings.—We have a girls' home, boys' home, missionaries' house, church and school combined, carpenter-shops, hospital, laundry, two store-rooms, horse and cow stables, but no new buildings have been erected this year.

Accommodation.—We could give proper accommodation to from seventy to eighty pupils.

Attendance.—Being a boarding school, this has of course been regularly attended with some fifty-two to fifty-four pupils.

Class Work.—This is in some departments encouraging, though the industrial school taking so many of our big boys, it is very difficult to get the gardening and general outside work done, while giving the amount of schooling we would like; yet on the whole the advancement is good. The fifth standard has quite a few pupils in it, and under Miss Wells, our able certificated teacher, the work goes on admirably, considering the difficulties to be overcome.

Farm and Garden.—In this I think we have done well. Of oats we raised some fifteen acres, and of garden stuffs about four acres, providing provender for horses and cattle, and plenty of vegetables for the staff and scholars; the latter are becoming quite fond of vegetables.

Industries Taught.—This heading surely is more fitting for an industrial school, yet we could number several. Among the girls, cooking, dressmaking, housekeeping, and butter-making are among the things taught, while the proper care of animals and poultry, proper milking, gardening, a certain amount of carpentering, and housework in general are carefully instilled, and I think in some cases grasped.

Moral and Religious Training.—This being a church school, care is given that a staff of workers may be obtained who will assist the principal in this important branch of the work. Time is taken both morning and evening, to instil the Bible principles and teaching into the minds and lives of the pupils. Sunday school work is not neglected, the commandments are carefully taught and explained, and special emphasis given to the need of a living faith, as shown in works, and not merely in dogma and creed.

Health and Sanitation.—I may say truthfully that our doctor has more than once stated to me that he has never seen such healthy Indian children as these in our school. I put it down to several reasons. Great care is used by all members of the staff to see that the laws of health are carried out, good food well cooked is provided, plenty of milk supplied, and since Dr. Lafferty operated for scrofula, that dread disease is very much more under control, which altogether has resulted in a big change regarding health. As to sanitary conditions, these are, I think, looked after in a sufficiently satisfactory manner for the country, proper outbuilding being supplied, and nothing of an offensive nature being allowed to accumulate, holes being dug to receive all refuse, which are continually filled in and others dug to take their places.

Water Supply.—Our whole island being percolated with water, this supply is abundant and good, pumps and wells supplied whenever required.

Fire Protection.—This is only fairly good, the grant of this year, which was to have made us safe in this respect, being too small to provide the required appliances, was therefore allowed to lapse. We have, however, three small chemical engines, a few hand grenades, four axes and a number of buckets, which are all kept in their places, the buckets being full of water.

Heating and Lighting.—The heating is fairly good, being done by furnaces assisted by numerous stoves. To improve materially would require a very considerable outlay. The lighting is from the ordinary coal-oil lamps.

Recreation.—I fear sometimes that, as I have stated before, the industrial schools drawing on our big boys, those left have almost too much work and schooling, to allow of the proper amount of recreation. However, football and cricket are from time to time provided for the boys, croquet for the girls, besides which swings, skipping-ropes, giant stride, and horizontal bar are all in continual use. There is good bathing, and many walks, berry-picking parties, and picnics are enjoyed.

General Remarks.—I think that this school, considering the nature of the Indians, is making very good progress, and so it ought, for every member of my staff is doing splendid, faithful, conscientious work, giving cheerfully long hours to the advancing of the pupils. There are many things in the way of improvements that I should like to see, but these I hope will come in time.

I have, &c.,

ARTHUR DE B. OWEN,
Principal.

NORTHWEST TERRITORIES,
BLOOD R. C. BOARDING SCHOOL,
BLOOD RESERVE, MACLEOD, ALTA., July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit to your department the annual report of this school for the fiscal year ended June 30, 1902.

Location.—This school is located about twenty four miles south of Macleod, one mile from the upper agency, within a few yards of the Belly river, on the reserve.—Address Blood (Immaculate Conception) Roman Catholic Boarding School, Blood Reserve, Stand Off, *via* Macleod, Alta.

Land.—The land connected with the school belongs to the reserve.

Buildings.—The school-building is divided into four parts. The main building comprises three stories, in the first of which is situated the dining-room, 17 x 30 feet; the parlour, 17 x 13; an office, the same size, and a hall, 10 x 17 feet. In the second story is the chapel, 18 x 36 feet, and two rooms for the staff; the third story is a large room, 36 x 36.

At each end of the main building and connected with it, are the second and the third part, comprising two good-sized buildings, 36 x 32 feet, with two stories each, and divided into two rooms. In the first story is situated the school-room and the recreation-hall, 32 x 12 feet, and in the second story are the dormitories. The boys use the west wing and the girls the east wing.

On the north side of the main building and connected with it, is the fourth part of the school-building, 20 x 20 feet, with three stories: in the first is the kitchen, in the second the dining-room for the staff, and in the third the teacher's private room.

There is besides the large building a laundry, 18 x 24 feet, a log hut with a shingled frame roof, and a small shed, 14 x 12 feet, used as a place for rubbish.

Accommodation.—The school being so divided into large rooms gives accommodation for a staff of eight or ten members and about sixty or seventy pupils.

Attendance.—The attendance has been satisfactory; in the course of the fiscal year four new pupils were admitted.

Class-room Work.—Class-room work consists of reading, spelling, writing, arithmetic, geography, drawing, and vocal music.

Farm and Garden.—Up to the present time no farming has been done; but the school raises every kind of vegetable, and the pupils seem to take a great interest in gardening. Each one was proud of his little garden, and success has been the result of their work.

Industries Taught.—Besides gardening, the bigger boys are taught to bake, and the girls to sew, knit, draw and cook.

Moral and Religious Training.—Instruction in the Roman Catholic faith is imparted to the pupils, morning and evening prayers are held, and half-an-hour every day is devoted to religious instruction.

Health and Sanitation.—The health has been good, although a few pupils suffered last winter from measles and scrofula. One girl was taken home by her father on account of sickliness, and is not yet back.

Water Supply.—The river supplies all the water required for the use of the school.

Fire Protection.—Five fire-extinguishers, four hand-grenades, twenty-four fire-pails and four fire-axes are distributed throughout the halls and the rooms.

Heating.—The school is heated with hot-air furnaces put up with the help of the Indian Department.

Recreation.—When the weather is favourable, recreation is taken outside, under the supervision of an attendant, and in bad weather the pupils stay in their respective recreation-halls.

General Remarks.—About the end of May we had an extraordinary flood that did heavy damage to the building, the extent of which we cannot yet estimate. The staff and the pupils had to leave the school for a few days. The furnace cellars were filled up with water to a level with the floor, and the water was about one foot or fourteen inches high all around the school.

I have, &c.,

J. L. LeVERN, O.M.I.,
Principal.

NORTHWEST TERRITORIES,
BLUE QUILL'S BOARDING SCHOOL,
SADDLE LAKE, ALTA., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to forward the annual report of this school for the year ended June 30, 1902.

Location.—The school is situated about six miles southwest of Saddle lake, and one mile north of the Saskatchewan river, on the Edmonton road.

Land.—About seven acres are set apart for school purposes.

Buildings.—The building is 60 x 30 feet, two and a half stories high, and suitably divided into the various departments necessary for the convenience of the school. The girls' dormitory is 34 x 30 feet, and the boys' dormitory 30 x 25 feet. The out-buildings consist of a bakery, laundry, storehouse, ice-house, stables and several smaller buildings.

Attendance.—The attendance is regular, owing to the fact that the pupils are all boarders at the institute.

Class-room Work.—The authorized programme is faithfully followed.

Farm and Garden.—About six acres are under cultivation. Vegetables are the principal products of the farm.

Industries Taught.—The boys are taught housework, care of cattle and farming. The girls are taught sewing, knitting, cooking and all sorts of housework.

Moral and Religious Training.—Special care is paid to moral and religious training, discipline and order.

Health and Sanitation.—The general health of the pupils has been good for the greater part of the year; but the coming of winter was marked by a severe form of measles. One death occurred during the year.

Water Supply.—The water is procured from a well near the school.

Fire Protection.—Fire-extinguishers are on hand, ladders are attached to the house, besides three stairways from the dormitories to the ground. Fire-pails are always ready.

Heating.—The building is heated by wood stoves.

Recreation.—The pupils have recreation three times a day after meals, during which they indulge in usual outdoor games.

I have, &c.,

LEON BALTER,
Acting Principal.

NORTHWEST TERRITORIES,
CROWFOOT R. C. BOARDING SCHOOL,
GLEICHEN P. O., ALTA., July 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to forward herewith the annual report, together with the financial statement of the Crowfoot boarding school for the year ended June 30, 1902.

Location.—The school is situated at the south camp of the reserve about ten miles from Gleichen post office, and within a few hundred yards of the Bow river.

Buildings.—The school-building is large, well ventilated and well lighted, the main building being 36 x 36 feet, three stories high, with two wings, each 36 x 32 feet, and two stories high. There is also situated behind the main building and adjacent to it a two story building, 20 x 20 feet. The south wing is not used owing to its not yet being completed. The building is divided at present into an office, reception-room, dining-room, kitchen, working-room and chapel, on the ground floor; and the dormitories, and the class-rooms upstairs.

The other buildings are a log stable, 16 x 24 feet, and a root-house. A well kept picket-fence surrounds the grounds in front of the building, while an ordinary wire fence serves the same purpose at the back and around the garden.

Accommodation.—Under present arrangements there is accommodation for twenty-five pupils, but when the building is completed there will be accommodation for sixty pupils and a staff of eight.

Attendance.—The pupils attend school regularly, all being boarders at the institute. The present attendance is seventeen, but the department has allowed a grant for twenty-five pupils for the present year.

Class-room Work.—The class-room work consists of reading, writing, spelling, arithmetic, drawing and vocal music. The advancement of the pupils in these branches does much credit to the teachers. The programme of the department has been followed, and I can say the progress is fair. The pupils are beginning to speak English, and that language is already quite familiar to their ears.

Farm and Garden.—At present there are about four acres under cultivation. We have a garden in which are raised a full supply of potatoes and other vegetables for the use of the school. The garden gives the pupils a healthy outdoor occupation and I am

glad to say they greatly enjoy it. Each pupils has his own little garden for flowers and vegetables and they take great interest in them. Quite a number of trees have been planted and they will add a great deal to the beauty of the place.

Industries Taught.—The boys have special hours during the day for manual work. They help in caring for the horses and cattle. The girls are taught general housework, sewing, knitting, washing, and the mending of clothes, &c.

Moral and Religious Training.—Instruction in the doctrines of the Roman Catholic Church is imparted to the pupils. Morning and evening prayers are said, and half an hour each day is devoted to religious instruction. The pupils seem to take an interest in religion and show by their behaviour that they understand the moral teaching imparted to them.

Health and Sanitation.—During the year we have lost one of our boys by death from tuberculosis and one of our girls died of heart disease. With the exception of these two cases, the general health of the children has been good. The sanitary conditions are looked after carefully, and everything is kept clean around the place and outbuildings.

Water Supply.—All the water-supply needed for the wants of the school is obtained from the river by the means of a two-wheel cart.

Fire Protection.—Fire-extinguishers, hand-grenades, fire-pails and fire-axes are distributed throughout the halls and rooms, but this is not sufficient owing to the water supply not being convenient.

Heating.—The school is heated partly with stoves, and partly with one hot-air furnace. The building is lighted by petroleum lamps.

Recreation.—Football, shooting with bows and arrows, fishing and riding are the favourite pastimes of the boys. The girls amuse themselves in playing ball, dressing dolls, &c. Recreation is allowed three times a day after each meal and is taken outside in good weather, or indoor games in bad weather, always under the supervision of an attendant.

I have, &c.,

J. RIOU, O.M.I.,
Principal.

NORTHWEST TERRITORIES,
CROWSTAND BOARDING SCHOOL,
CROWSTAND P.O., ASSA., September 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report of the Crowstand boarding school for the year ended June 30, 1902.

Location.—The school is situated on the east bank of the Assiniboine river, in Eastern Assiniboia. It is just bordering on Coté's reserve, Pelly agency, and is forty-five miles from the town of Yorkton.

Land.—The land is the fractional south half of section 19, township 29, range 31, west of 2nd P.M. There are approximately three hundred acres of land, the property of the Presbyterian Church in Canada. The soil is well adapted for mixed farming.

Buildings.—The buildings are : the main building, of frame, comprising class-room, children's dining-room, kitchen and pantries, laundry, recreation-rooms, boys' and girls'

dormitories, and private apartments for staff, stone milk-house and ice-house, log store-room, carpenter-shop, frame stable, log stable and driving-shed.

Accommodation.—The buildings afford ample accommodation for fifty children and the necessary staff to carry on the work.

Attendance.—The attendance throughout the year has been very regular. A grant is allowed for forty children, and the average attendance was thirty-nine, besides which there were in attendance seven non-treaty half-breed children.

Class-room Work.—The work in the class-room, was carried on throughout the year without interruption. The school was inspected during the year by the department's inspector, and also by the Territorial public school inspector, both of whom reported quite favourably of the work being done.

Farm and Garden.—Only some twenty acres were cultivated during the year, but the returns were excellent. Five hundred bushels of potatoes were grown, in addition to as much of other vegetables as could be used. Oats yielded fully seventy bushels per acre.

Industries Taught.—The industries taught are : farming, care of stock, carpentering, baking, cooking, dairying, washing, sewing, knitting, and general housework.

Moral and Religious Training.—While earnest effort is put forth to give the children a good secular training, yet we never lose sight of the fact that the work is also missionary in the highest sense of the word. Each day is begun and closed with family worship, consisting of the singing of a hymn, reading the Bible, and prayer. Religious services are held every Sunday, and the regular Sabbath school work is also taken up.

Health and Sanitation.—The health of the school has on the whole been good. With the exception of a few mild cases of scrofula, and one case of pneumonia, there has been no serious illness during the year.

There were no deaths. The sanitary conditions continue good.

Water Supply.—The Assiniboine river continues to be the source of our supply of water, and it is apparently good.

Fire Protection.—The protection against fire is rather inadequate.

There are from each of the dormitories, outside fire-escapes.

In the building are two Babcock extinguishers, a number of hand-grenades and fire-pails distributed throughout the building.

Heating and Light.—The building throughout is heated by wood furnaces and is very comfortable. For lighting coal-oil lamps are used.

Recreation.—Separate recreation grounds are provided for boys and girls, and a fair amount of time is set apart for recreation.

All of which is respectfully submitted.

I have, &c.,

NEIL GILMOUR,
Principal.

NORTHWEST TERRITORIES,
COWESSESS BOARDING SCHOOL,
CROOKED LAKE AGENCY, BROADVIEW, ASSA., July 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the Cowessess boarding school for the fiscal year ended June 30, 1902.

Location.—The Crooked Lake boarding school is situated in the Qu'Appelle valley south of Crooked lake, on Cowessess reserve. The surroundings are beautiful, the river, the lake and hills adding to the pleasantness of the locality.

Land.—There are about sixty acres of land in connection with the school.

Buildings.—The buildings actually in use are as follows :—the priest's house, 30 x 20 feet ; the church, 62 x 20 feet ; a house, 20 x 20 feet, exclusively reserved for the Indians ; an ice-house, 12 x 14 feet ; a stable, 65 x 20 feet. The main edifice, with the institute proper, is a three story building. Its dimensions are 58 x 38 feet and the height from the ground to the top roof is 52 feet.

The basement contains a dining-room, a kitchen, pantry, a dairy-room, a lavatory with a large boiler, a rain-water tank, and root-house.

On the first floor are the entrance, the parlours, the chapel, a pharmacy, the school-room, 26 x 15 feet 3 inches, and the boys' play-room, 32 x 14 feet.

On the second floor are situated the girls' play-room, the sewing-room, three rooms for the accommodation of the staff, the nuns' quarters, and two sick-rooms, one for the boys and one for the girls.

On the third floor are situated two large dormitories, 35 x 23 feet, their height being 12 feet 6 inches, also a garret containing a large water-tank.

Accommodation.—Under present arrangements there is accommodation for sixty-five pupils and a staff of eight.

Attendance.—The pupils being all boarders, the attendance is very regular. The number of children on the roll is thirty-seven.

Class-room Work.—The programme of studies given by the department is followed as closely as possible, under the circumstances. The subjects taught are : religious instruction, grammar, parsing, drawing, spelling and useful knowledge in arithmetic, history and geography, but special attention is given to reading and writing. The progress is good and encouraging. English is generally spoken, and I may say it is now quite familiar to almost all the pupils.

Farm and Garden.—There are about fifteen acres this year under cultivation. We have also a garden in which are raised a full supply of potatoes and other vegetables for the use of the school. The garden and the farm work, give the children a healthy occupation.

Industrial Work.—Our children have special hours every day for manual work. The boys are kept working according to their age, they help in caring for the horses, cattle, pigs and poultry ; while sewing, knitting and general housework is taught the girls, without neglecting, however, to keep clean their recreation-room and dormitory.

Moral and Religious Training.—Particular attention is given to this important branch of education. A short religious instruction is given daily on some practical subject such as : order, cleanliness, politeness and obedience : after which hymns are sung. The character of each pupil is cultivated with care.

Health and Sanitation.—The sanitary condition of the school, owing to the excellence of our fresh air, drains and the abundance of light, is very good and the general health of the pupils is a surprise to all our visitors. Frequent baths are resorted to, and the premises are always kept in perfect order.

Water Supply.— Our water-supply is taken from a well in the basement; although we have all the water necessary for ordinary purposes, still, in order always to have an unlimited supply at hand to be ready for fire, the well should be deepened. The water is of fair quality.

Fire Protection.—Fire-protection is abundantly provided for, by means of a gasoline engine and power-pump of one hundred gallons capacity per minute, connected by a two inch stand-pipe with a tank in the attic, which tank can be shut off by one pull of a lever and the water is then pumped direct into stand-pipe, maintaining a pressure of 100 lbs. on 1½ with ⅞ nozzle. These connections are placed in each dormitory and in each hall, also one in basement and one outside of building. The pump and engine are used to elevate the water required to supply the tank in attic, and thence through stand-pipe to plumbing system, which is consequently always ready for use. The engine is started by an electric spark, and a stream can be playing on the fire in ten seconds. The engine is also provided with tube ignition, and should a fire start in such a place that the engine could not be operated, we should still have all the water pressure from the tank on the hose all the time, which is a pressure of 23 pounds in basement. The pump is provided with a safety-valve to prevent breakage. Besides we have two Babcock extinguishers in a convenient place, and also a dozen fire-buckets hung up throughout the different rooms. I regret to say, however, that we have not been able, as yet, to provide the building with fire-escapes.

Heating and Lighting.—The building is heated entirely by two hot-air 'New Idea' furnaces. An abundant supply of pure air is constantly admitted, in order to replace the foul air that leaves by the ventilators which are placed in the dormitories and halls, and give great satisfaction. The school is lighted throughout by acetylene gas, the machine being kept in a properly ventilated room by itself. No lighted lamps are allowed inside and matches are placed under the control of the attendants. Furthermore, a new system of generator adapted to the acetylene machine by Rev. Brother Eugène, has greatly improved its working.

Recreation.—Football, cricket, swimming, fishing, shooting with bows and arrows during summer, skating, singing, playing cards, marbles, checkers and playing the violin indoors, are the favourite pastimes of our boys. The girls amuse themselves with drawing-slates, dressing dolls, playing ball, singing and skipping.

General Remarks.—I am happy to announce that our school has been under the direction of the Sisters of St. Joseph since last fall. They are much esteemed by the public and are greatly encouraged by Mr. Begg, our agent, who takes interest in visiting faithfully our class each month; furthermore I am glad to add that there has been progress along the whole line.

I have, &c.,

S. PERRAULT,
Principal.

NORTHWEST TERRITORIES,
DUCK LAKE BOARDING SCHOOL,
DUCK LAKE, SASK., July 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the fiscal year ended June 30, 1902.

Location.—The school is situated about half a mile from the town of Duck Lake, and three miles from Duck Lake reserve.

Area.—The land in connection with the school comprises one hundred acres, which is the property of the government. Its legal subdivision is section 4, township 44, range 2, west of the third meridian.

Buildings.—The main building consists of entrance-hall, reception-room, principal's bed-room, offices and dining-room. No additional buildings have been erected this year; the girls' quarters being exceedingly comfortable with the exception of a work-room which we feel the need of very much, the girls being obliged to work in the laundry. The outdoor buildings have been repaired and re-painted during the year.

Accommodation.—There is ample accommodation for sixty girls in our new dormitory, which is greatly admired by visitors, and our two class-rooms are all that could be desired. We hope, next year, the boys' quarters will be equally satisfactory. There is a staff of about twelve members.

Attendance.—The attendance has been the same as the authorized number, viz.: one hundred pupils.

Class-room Work.—Special attention is paid to the class-room. Two competent teachers have charge of this department, and a pupil assistant for the newly arrived children who are unable to follow the classes. Both oral and written examinations are frequently held, and slight rewards given to those who have made the most progress. The higher classes follow the half-time system. Out of school hours, singing, music, and calisthenics are regularly taught.

Farm and Garden.—The boys assist in all farm and garden work, and a very promising harvest rewarded their efforts. We were able to put away in our spacious cellars, nearly three thousand bushels of potatoes, also a large quantity of turnips, carrots, onions, cabbages and beets, which lasted nearly all the year. Our garden is the admiration of our numerous visitors, who are surprised to see that fruit and flowers can be brought to such perfection in so uncongenial a climate.

Industries Taught.—Farming and gardening, the care of horses and cattle, the necessary repairs to fences, painting, glazing, sawing and cutting wood for the laundry and kitchen, kept our boys in constant work, while the girls are employed in dairying, laundry and housework, sewing and the making and mending of clothes, for great and small. The little ones whose ages vary from six to ten are employed an hour each day in knitting stockings for their more grown companions.

Moral and Religious Training.—We can truly say that the children give satisfaction, while respect for authority and obedience is continually insisted on.

Morning and evening prayers, and regular services on Sundays, are never omitted by us; also religious instruction three times a week.

Health and Sanitation.—The health of both staff and pupils during the year has been good. We regret to report two deaths during the early spring. Although on every side we have had infectious diseases, yet with prudence and care we have been wonderfully preserved. The ventilation and sanitary conditions are good, and the entire premises are kept in order.

Fire Protection.—Our appliances in case of fire are : Babcock extinguishers, hand-grenades and force-pumps, while barrels of water are kept constantly near at hand.

Heating and Lighting.—The school is heated by three furnaces, which require constant supervision night and day. The house, yards and stable are now lighted by acetylene gas, the machine being kept in a properly ventilated room by itself.

Recreation.—The usual amusements of childr n are kept up, while football marbles, checkers, singing and music predominate. On the occasion of the annual sports, the boys received great applause for the performance of the brass band. Both boys and girls are generally fond of music and singing.

Admissions and Discharges.—Fifteen pupils were admitted during the year, eight boys and seven girls. Ten pupils were discharged ; of these five are already married, some are working out, and some working with their parents.

General Remarks.—Before closing, I beg to thank the department for the kindness and interest it has shown to this school. I must also acknowledge the zealous co-operation of our good agent, Mr. Jones, and the faithful work of the members of my staff, throughout the year.

I have, &c,

M. J. P. PAQUETTE, Ptre., O.M.I.,
Principal.

Northwest Territories,
Emmanuel College,
Prince Albert, August 20, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report of this school for the fiscal year ended June 30, 1902.

Location of School and Area of Land.—The school is situated about two miles west of the rising town of Prince Albert. The land in connection therewith is a river lot, having twelve chains frontage, extending back two miles and containing about two hundred acres.

Buildings.—There are three buildings occupied by the staff and pupils. The main building is occupied by the female members of the staff and the girls. The bed-rooms, dormitories and lavatory are in the upper story, and in the lower story are the school-room for the senior classes, the dining-room, kitchen and pantry. There are also in this building a clothing-room, sewing-room, and a room for cases of sickness. In the second building is a dormitory for the younger boys, with a lavatory, a room for drugs and medicines, an office, and apartments for the principal. In the third building are dormitories, lavatory, bath-room, reading and recreation-room for the senior male pupils, a room for the head teacher, and also a school-room for the junior classes. The outdoor buildings are : a large house used as a granary and warehouse, a coach-house, a stable, 44 x 22 feet, a pig-pen, and a hen-house.

Grounds.—The ground immediatly attached to the buildings is laid out to afford ample playgrounds for the pupils, both boys and girls.

Accommodation.—The alterations that were made in the rooms of the buildings last year and also the year before have helped to give plenty of room for the authorized number of children. Along with these alterations, the kitchen, sewing-room, and both

lavatories have been re-modelled and enlarged, securing much greater convenience and comfort for the pupils.

Class-room Work.—The pupils all attend school twice daily, with the exception of the elder girls, who assist in the dining-room and kitchen by turns. The school hours are from 9.30 a.m. to 12 noon, and from 1.30 p.m. to 3 p.m. Besides the regular school hours, they have study from 8 to 8.30 a.m. and from 7 to 8 p.m. The course of study is about the same as that used in the public schools of the Northwest Territories.

The pupils are graded as follows :—

	Boys.	Girls.	Total.
Standards I	6	6	12
" II	3	3	6
" III	10	4	14
" IV	5	2	7
" V	3	4	7
" VI	6	1	7
	33	20	53

The reserves from which the attendance is drawn are as follows :—

Ahtahkakoop's	17 pupils.
John Smith's	13 "
James Smith's	4 "
James Roberts'	1 "
William Charles'	3 "
William Twatt's	5 "
Mistawasis	3 "
Non-Treaty	7 "
Total	53

Farm and Garden.—Our crop last fall reached six hundred and forty-six bushels of good prime red Fife wheat, five hundred and thirty-six bushels of oats, five hundred and fifty bushels of potatoes, fifty bushels of carrots, fifty bushels of onions, five bushels of beets, ten tons of turnips, five tons of brome grass, and thirty tons of wild hay, the whole of which was grown on the College farm.

Industrial Work.—All the general work required on the premises is performed by the pupils. The girls are taught all kinds of useful household work, such as sewing, knitting, making of clothing, mending, darning, washing, ironing, house-cleaning and cooking. All the bread that is used in the school is made by the girls, and is baked in a portable Reid oven, which has a capacity of eighty loaves of two pounds weight.

The boys are taught the various kinds of farm work, such as attending to the horses and cattle, milking the cows, drawing water, chopping wood, ploughing, harrowing, harvesting, hay-making, carpentry, repairing of fences, and any ordinary work required; so far, all this has been done by the boys under the direction of the principal; but, as several of the duties connected with the industries of this institution, require more attention now than they did a few years ago, the time has arrived when we are obliged to have an outside man to help to take charge of the farm and other industrial work.

Moral and Religious Training.—Morning and evening worship is regularly conducted for the whole school. On Sunday, regular religious services are held in the College chapel, morning and evening. Every Sunday afternoon, at 3 o'clock Sunday school is held. This lasts one hour and is always a most profitable hour. The children are very fond of singing hymns and of the study of the Holy Scriptures. The leaflets used are those published by the Church Record, Toronto. A number of our pupils are communicants. The conduct of the pupils has been very satisfactory.

Health of Pupils.—The health of the pupils was very good up to February 1, when measles of more than ordinary form broke out in the school and lasted

for one month, while the members of the staff acted as nurses to the sick. Forty-two pupils were confined to bed, during which time the school was quarantined. Some of the pupils were left very weak after their attack of measles, four of whom, I regret to say, died from after-effects, three from consumption and one from convulsions. The health of the pupils is now good. The children get as much outdoor exercise as is practicable. The domitories class-rooms, and all other rooms, are kept very clean and well ventilated.

Water Supply.—We have one well, with good water, the other two are useless, one has gone dry, the other has been destroyed by surface water. We contemplate digging an additional well this summer.

Fire Protection.—We have five fire-extinguishers, which were kindly supplied by the department, eighteen hand-grenades, twelve fire-buckets and two axes.

Heating.—Stoves are used in two of the buildings, but in the main building, where the girls and female members of the staff live, a furnace is used. The fuel used is wood.

Attendance.—The attendance has been very regular, and during the course of the fiscal year, twelve new pupils have been admitted. Seven pupils were honourably discharged, six of whom have gone back to their reserves and one, Charles Quinney, is employed by the department as school teacher in the Cumberland district. This makes eight young men teaching school, at the present time, in the district of Saskatchewan, who were formerly pupils of Emmanuel College.

Recreation and Amusement.—Our children have plenty of recreation. The boys have cricket, football, swings, military and physical drill. Besides this, the College brass band, which was organized about a year ago, furnishes a great deal of amusement and delight and does much to enliven the place. The girls take a great deal of interest in their calisthenic corps. They enjoy physical drill, dumb-bell exercise, skipping, throwing and catching the ball, swinging, reading and music, and a walk almost daily, attended by a member of the staff. We endeavour to make the children feel as happy here as possible.

I have, &c.,

JAMES TAYLOR,
Principal.

NORTHWEST TERRITORIES,
ERMINESKIN'S BOARDING SCHOOL,
HOBBEMA, ALTA., July 9, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902.

Location.—The Ermineskin boarding school is situated on the Ermineskin reserve about a mile from Hobbema station, in the district of Alberta. There is no post office at Hobbema, but the mail is delivered each day.

Land.—There is about twenty-two acres of land in connection with the school, given to the wants of the mission. A part of the land is used as a garden, another part is an ample yard for the pupils, and the rest is used for pasturage. All the grounds are fenced.

Buildings.—A building, 40 x 50 feet, three stories high and entirely given to the use of the pupils, is divided, as follows: first story contains the school-room and refectory; second story includes boys' dormitory, sewing room and infirmary: in the third story is situated the girls' dormitory. A kitchen, 25 x 20 feet, attaches this building to the private rooms occupied by Sisters. Above the kitchen there is a chapel.

Accommodation.—There is accommodation for eighty to eighty-five persons.

Attendance.—The total attendance has been fifty,—twenty-seven boys and twenty-three girls.

Class-room Work.—The pupils have five hours of class-room work, and one hour of study each day. The branches of study for the senior class are:—arithmetic, grammar, geography, history, composition, dictation, reading, writing, drawing and general knowledge. For the junior class: reading, writing, spelling, dictation, arithmetic, drawing and simple elements in general knowledge.

The pupils are graded as follows:—

Standard I	23	pupils.
" II	9	"
" III	8	"
" IV	7	"
" V	1	"
" VI	1	"
Total	49	

The pupils are getting more and more familiar with the English language; they understand what they learn and they like study more than any other kind of work, in a word, we may say that their progress in each branch of the programme of studies laid down by the department has surpassed our expectations. A difficulty is, that the parents take their children away from the school before their time is completed. This is the reason why so few reach the high standards.

Farm and Garden.—Three acres of land are under cultivation as a garden. The last crop gave us four hundred bushels of potatoes, thirty-five of turnips, and a large supply of other vegetables. This work is done by the boys.

Industries Taught.—Between the school hours, the pupils have some time for manual work. Some boys have to look after five horses, eleven head of cattle, some pigs and fowls, while the others do the sweeping of their respective rooms, saw the wood and carry it to the house for daily use. The girls take turns in the kitchen, at the washing and the different duties of the house. They have made by hand, during the year, twenty dresses, forty shirts, three hundred towels, one hundred handkerchiefs, twenty-five night dresses, twenty-five aprons, fifty pairs of stockings, twenty-five pairs of mitts and the mending of all pupils under-clothes.

Moral and Religious Training.—The pupils pay great attention to the daily instruction they receive from their missionaries and their teachers. They attend all the services held in the church.

Health and Sanitation.—One pupil died last fall during the epidemic of measles which were very severe; twenty of the pupils having been sick with the disease. We have now a case of consumption: otherwise the health is generally good. The ventilation is excellent.

Water Supply.—Two wells furnish the buildings with a sufficient quantity of water.

Fire Protection.—Many barrels and pails are kept constantly full of water and at hand. Some ladders are attached to the building. We have a trap door in the upper story and two fire-extinguishers.

Heating and Lighting.—The house is heated by eleven box stoves and lighted by lamps.

Recreation.—The recreations in summer vary, but consist principally of picnics, lunch on the prairie, walks on the reserve, fruit-gathering, swings, football, and many

other games which are peculiar to Indian children. In winter, skating and coasting are the principal amusements.

General Remarks.—The pupils have given four public entertainments during the year. They received special training in singing, drills, and recitation. Our aim in so doing is to strive to overcome that bashfuln ss which is so natural to them.

I have, &c.,

L. DAUPHIN, Ptre., O M.I.,
Principal.

NORTHWEST TERRITORIES,
FILE HILLS BOARDING SCHOOL,
BALCARRES, July 15, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the File Hills boarding school for the fiscal year ended June 30, 1902.

Location.—The school is situated on section 32, township 23, range 11, west of the 2nd meridian, about four hundred yards to the west of the File Hills agency buildings.

Land.—About two hundred acres of land are connected with the school and owned by it. About four acres are inclosed with the buildings for a vegetable and flower garden and lawn.

Buildings.—The buildings are : the home, which is built of stone, with a mansard roof, is 30 feet square, three stories high, furnished and conufortable ; a frame kitchen, 12 x 18 feet, the school-room, about fifteen yards to the west of the home, is a frame building with a stone foundation, 16 x 34 feet, with a porch in front, which is used as a wash-room : two log stables, which have to be replaced before winter ; a log carriage-house and a root-house, which were built last fall.

Accommodation.—In the house are two dormitories and seven rooms, which will accommodate twenty children and a staff of three.

Attendance.—The number on the roll is fifteen. A higher number could be secured.

Class-room Work.—This branch of the work has been very encouragiug. The prescribed programme of studies has been followed out and as a rule the children have shown an increasing interest in their lessons, especially while the cool weather lasted.

Farm and Garden.—We have about three acres in garden, counting the turnip field. It is in good condition and promises a bountiful return.

Last year's crop was a splendid one and we had an ample supply of potatoes, carrots onions, &c., to do us all winter. Besides our garden, we have about four acres under oats.

Industries Taught.—The girls are taught general housework, baking, butter-making sewing, knitting, washing and ironing. The boys are taught gardening, a little farming, care of stock and general chores both outside and in.

At the Indian exhibition the work shown by the children was appreciated and a number of prizes were secured.

Moral and Religious Training.—These subjects receive special attention. They are taught each day.

Health and Sanitation.—The health of the children is very good at present and seems to be improving. The sanitary condition is good.

Water Supply.—We have a sufficient supply of water convenient to the school.

Fire Protection.—We have ladders and pails, with water at hand for fire-protection. There are two ways of escape from every part of the building.

Heating and Lighting.—We use stoves and oil lamps for heating and lighting.

Recreation.—The children enjoy the ordinary outdoor sports and games, winter and summer, and various games in the home during the long winter evenings.

I have, &c.,

KATE GILLESPIE,
Principal.

NORTHWEST TERRITORIES,
GORDON'S BOARDING SCHOOL,
KUTAWA P.O., ASSA., July 7, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the Gordon's boarding school for the fiscal year ended June 30, 1902.

Location.—The school is located on the west side of Gordon's reserve, about twelve miles from the agency headquarters.

Land.—The area of land in connection with the school is three hundred and twenty acres, and comprises the east half of section 4, township 27, west of second principal meridian. This, I believe, has been allotted to the school by the government.

Its natural features are prairie, very hilly, with some sloughs, and about twenty-five acres of tillable land, but no wood.

Buildings.—The main building is the same as last year, and is used for school purposes.

The old building has been removed and rebuilt into a laundry and storehouse.

The stables, which are the same as given in last year's report, are used for horses, cattle and poultry, and there is also a root-house, and ice-house, the same as stated last year.

A new addition has been erected for the cows, 16 x 20 feet, and the floor in the school-room has been repaired.

Accommodation.—There is ample accommodation for thirty-five pupils and four of a staff.

Attendance.—The attendance has been remarkably good during the past year.

Class-room Work.—The pupils' course of studies is that laid down by the department. I may add that there is a marked improvement, especially in speaking English.

Farm and Garden.—We do not farm, but our garden consists of about three acres. An abundance of vegetables was raised of every description. There is also a beautiful flower garden, which is the delight of the children.

Industries Taught.—The boys are taught the care of horses and cattle, poultry and pigs, milking, and gardening in summer.

The girls are taught all household duties, butter-making and the care of the same. I cannot speak too highly of the proficiency of the girls in their work.

Moral and Religious Training.—Very careful attention is paid the pupils in this respect, and I am happy to say that not one case of immorality has occurred, and in no case had severe punishment to be administered. Their moral conduct has been excellent.

Health and Sanitation.—The health on the whole has been good, with the exception of colds, and two or three cases of sore necks. No deaths occurred during the past year.

The sanitary condition is all that can be desired; the building is well ventilated and kept very clean. I may say that the children take a pride in helping to keep it so. It has been alabastined and painted.

Water Supply.—Our water-supply is obtained from wells about three hundred yards from the school. These are situated in a slough, and can not be approached during the early part of the summer; consequently our supply has to be obtained from sloughs part of the year.

Fire Protection.—This consists of two Babcocks, two Carr chemical fire-engines, one pump, two lengths of hose, twelve buckets, six axes, sixteen hand-grenades, nine fire-extinguishers, and a small tank, besides several barrels.

Heating and Lighting.—The building is heated with wood stoves, but these do not furnish sufficient heat to keep the frost out of the dormitories and bed-rooms.

Lighting is done with lamps and coal-oil.

Recreation.—Football and swings form the favourite pastime of the children during the summer months.

Coasting and games in the school-room, are the chief recreations during the winter.

I have, &c.,

M. WILLIAMS.
Principal.

NORTHWEST TERRITORIES,
HOLY ANGELS BOARDING SCHOOL,
NATIVITY MISSION, FORT CHIPEWYAN,
ATHABASKA LAKE, July 4, 1902.

The Honourable
The Superintendant General of Indian Affairs,
Ottawa.

SIR,—I take pleasure in forwarding the annual report on matters connected with our school for the year ended June 30, 1902, hoping that it will prove satisfactory.

Location.—The Holy Angels boarding school on Nativity Mission near Fort Chipewyan belongs to the Roman Catholic Mission and is under the care of the Sisters of Charity commonly called Grey Nuns of Montreal. It is situated on the banks of the Athabaska lake, facing its water, and is lined on every other side with naked and barren rocks which were formerly covered with fir-trees.

Fort Chipewyan possesses no post office nor are we located on a reserve.

Land.—The soil is sterile and rocky. There is, at a short distance from our building, a little stretch of land flat and low, which was formerly a lake. As no place fit for cultivation could be found, the Right Reverend Bishop Farand set to work to drain it and thus succeeded in making a field fifteen acres in area. This field is all the farm we possess, and although its soil lacks many good qualities, it is, however, the most susceptible of cultivation that can be found in the surroundings. It admits of the culti-

vation of barley and potatoes. These thrive well enough when not injured by frost, which is very often the case. Carrots, cabbage and turnips are not so easily damaged by the sudden changes of temperature that frequently occur during the summer heat. It is unfortunate that they thrive but poorly in our unfruitful soil.

Buildings.—These consist of three buildings forming an open square to the north. The west wing measures 38 x 27 feet and 35 feet high. The centre building is 50 x 30 rising to a height of 30 feet. The east annex, which is not yet completed, is 50 x 25 and 35 feet high.

A large class-room, an infirmary for boys, their refectory, two parlours and a kitchen to which a wash-house is added, are found on the first floor of the west and centre buildings. The second story is partly occupied by the girls, who have a dormitory and infirmary there; further on is a small chapel and rooms reserved for the use of the Sisters in charge. Above is the boys' dormitory. These buildings are two stories high; the new wing three. After the completion of the new wing, the girls will take possession and thus be further removed from the boys. On the ground floor of this wing is situated the kitchen and two refectories. The first story comprises a recreation and sewing room and in the upper story is the dormitory.

Accommodation.—Accommodation can be provided for sixty pupils, seven Sisters and six auxiliary or lay sisters.

Attendance.—School is kept regularly except on usual holidays. The pupils attend assiduously.

Class-room Work.—The subjects taught are: reading, writing, grammar, arithmetic, geography, history of Canada and vocal music.

Farm and Garden.—The children weed the garden and help in whatever little work they can do on the farm; besides this, the boys saw and chop in the yard all the wood required for fuel.

Industries Taught.—The girls are taught sewing, knitting, darning, embroidery and cooking; in fine, nothing is neglected to procure for them the advantage of becoming good housekeepers.

Moral and Religious Training.—The pupils daily attend divine service held in the chapel on week-days; they go to the mission church on Sundays.

The Reverend Father in charge instructs them with great care in their religious duties, which we endeavour to make them understand and practise.

Health and Sanitation.—As a rule the Indians' state of health is very precarious, but I am happy to state that our children form an exception this year, the sanitary condition being thoroughly satisfactory. After having examined the pupils, Dr. Hislop kindly wrote a certificate, of which I will give a copy.

CHIPEWYAN, June 19, 1902.

I hereby certify that I have this day examined the Holy Angels boarding school of this place and find the health of the children to be first-class, also the sanitary conditions very satisfactory.

JNO. HISLOP, M.D.,
Treaty No. 8.

Water Supply.—The only water used here is that which is drawn from the lake.

Fire Protection.—The fire-appliances on hand are: a force-pump with hose, ladders, buckets and axes. A large tank will be added as soon as our carpenters have finished the new wing.

Heat and Light.—Wood is used for heating and coal oil for lighting.

Recreation.—Outdoor games are frequently engaged in. When the weather is fair, the children are allowed to row their skiffs on the lake, and when time permits, the mission steamboat conveys them to one of the many islands that dot our great lake. These

being our picnic resorts, are cherished by the children as spots that afford them the greatest pleasure they can wish for in summer-time.

During the cold season a long walk taken every day proves beneficial to health.

I have, &c.,

SR. McDOUGALL,
Principal.

NORTHWEST TERRITORIES,
LESSER SLAVE LAKE C.E. BOARDING SCHOOL,
LESSER SLAVE LAKE, ATHABASKA, July 19, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to forward my annual report on the Lesser Slave Lake (Church of England) boarding school for the year ended June 30, 1902.

Location.—The school faces south, being situated about a mile from Buffalo lake, over which it commands a good view. Buffalo lake is joined by the Heart river to Lesser Slave lake proper; the latter is about six miles from the mission. Heart river passes within half a mile of the school, emptying itself into the lake.

This mission is not situated on a reserve.

Land.—The land was surveyed last summer, and contains about ninety acres, and is the property of the Church Missionary Society. It consists of bush and prairie; the soil is a sandy loam, well adapted for all kinds of agricultural purposes.

Buildings.—These consist of the girls' home, 24 x 30 feet, the ground floor of which is divided into the children's dining-room, matron's sitting-room, and sitting-room for the teacher and wife (the latter is matron for the boys). On the upper floor are the matron's bed-room and girls' dormitory. There is a kitchen adjoining, 12 x 15 feet.

The boys occupy a new wing which was added to the original building in the year 1900. Its dimensions are 32 x 34 feet. The ground floor is used as a school-room and boy's day-room. The upper floor contains boy's dormitory and teacher's bed-room.

The other buildings consist of a fish and ice house combined, with a school store above, a root-house, an implement-shed, stables, old storehouse with clothing-room above and two closets.

Accommodation.—There is accommodation for fifty pupils and four of a staff.

Attendance.—For the three quarters ending December, March and June, we had a daily school average of thirty-seven and one-half, forty-four and one-half, and thirty-seven and one-half respectively, not taking into account day pupils. During the year we had sixty-two pupils on the roll.

Class-room Work.—English, reading, writing, arithmetic, geography, general knowledge, ethics, recitation, vocal music, cooking, and religious instruction comprise the studies taught at the school.

Farm and Garden.—The boys assist in all farm and garden work. This year we have about six acres of oats under cultivation, two acres of potatoes, and a garden of about half an acre, well stocked with vegetables of various kinds. We can safely say that this year our garden surpasses anything in the Calgary or Edmonton districts. We had good-sized potatoes on July 9. Tomatoes were in blossom on July 10. Milch cows and horses are kept at the mission.

Industries Taught.—The boys are taught agriculture.

Moral and Religious Training.—This is carried on under Church Missionary Society lines.

Health and Sanitation.—There are two closets, one for boys and one for girls, about thirty yards from the buildings.

During the latter part of the winter grippe ran through the school; it left its effects on one treaty boy, bringing on lung trouble.

Water Supply.—During the summer water is brought from the river by means of a water-cart; ice and snow are used in winter.

Fire Protection.—This consists of a ladder attached to the roof of the kitchen and another to the roof of the home.

Heating and Lighting.—All the buildings are heated by box-stoves, wood being the fuel used.

The home is lighted with coal-oil lamps.

Fencing.—We have about fifty acres of our section of land inclosed within a fence; the greater part of it is a wire fence, posts twelve feet apart, with a top rail and four strands of wire. It was built this spring to replace the old fence of rails.

Recreation.—Cricket, football, baseball and indoor games constitute the chief recreation of the pupils.

General Remarks.—Two treaty children—No. 47, Celista Ward, and No. 32, Peggie Ward—were taken by their parents from the home, because they refused to keep the rules of the school. Shortly after their departure, the girl got into a disgraceful affair with a married man. The case was tried before the justice of the peace of this place, but was dismissed owing to insufficient evidence. The mother is greatly to blame in this affair, not only in taking the child away from the home, but in allowing her to run wild without proper control.

I have, &c.,

C. D. WHITE,
Principal.

NORTHWEST TERRITORIES,
ST. BERNARD'S MISSION R.C. BOARDING SCHOOL,
LESSER SLAVE LAKE, July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the fiscal year ended June 30, 1902.

Location.—The St. Bernard's mission is situated on the northeastern bank of Lesser Slave lake, on a beautiful hill, which slopes towards the lake and commands a view of the surrounding country.

Buildings.—There are three buildings. The main structure is 72 x 28 and three stories high. The boys' house is 60 x 25 and two stories high. The third building, which has been set apart for a school-house, is 30 x 24 and three stories high.

Accommodation.—The main building affords ample accommodation for fifty girls. Their apartments comprise a large recreation hall, two roomy and well ventilated dormitories, a cheerful sewing-room and refectory. The staff, composed of eleven members, also occupies apartments in this building. The remaining space serves for a chapel and for a kitchen.

The boys' house accommodates forty pupils ; it affords the same advantages as the girls' departments.

The school-house is divided into three class-rooms. The interior of this building is not yet completed.

Land.—The area of land connected with the school is about nine acres and belongs to the mission.

Attendance.—Our pupils, for the greater number, enter school in September and leave at the end of June. The average attendance is between fifty and sixty pupils ; about forty remain during the summer months.

Class-room Work.—Very satisfactory work was done by the pupils in the class-rooms. The children are well advanced for their years, and many among them seem to appreciate the advantages of the instruction received here. The branches taught are reading, spelling, arithmetic, grammar, geography, history, writing, composition, ethics, vocal music, instrumental music, drawing, calisthenics, &c.

Farm and Garden.—About two hundred and ninety-five acres of land are under tillage, the farm comprises two hundred and fourteen acres ; the rest is cultivated as a garden.

Industries Taught.—The young girls learn the culinary art, washing, ironing, sewing and dressmaking ; in a word, everything that a good housekeeper should know. The boys are early accustomed to work on the farm.

Moral and Religious Training.—Their moral and religious training is based upon the pure and unsullied doctrines of Holy Scripture.

Health and Sanitation.—With the exception of a few slight colds, the pupils have all enjoyed perfect health during the past year. The climate is most favourable.

Water Supply and Fire Protection.—Very good water is supplied by wells, dug close to the house. These wells, ladders and hose are our only protection against fire.

Heating.—The principal building is heated by a hot-air furnace, which gives great satisfaction. The chief advantage of this mode of heating is the even temperature produced throughout the entire building. The other houses are heated by stoves, in which we burn pine, spruce, poplar and birch. The surrounding forests abound in trees of this kind.

Recreation.—During the summer months the children amuse themselves with bows and arrows, marbles, swings, skipping-ropes and boating. In winter they have football, tobogganing, skating and indoor amusements common to their age. The brass band is another source of amusement ; the children are fond of music and enjoy their lessons greatly.

The government grants yearly $72 per capita for each of forty pupils.

A. DESMARAIS, O.M.I.,
Principal.

NORTHWEST TERRITORIES,
MUSCOWEQUAN'S BOARDING SCHOOL,
TOUCHWOOD HILLS, ASSA., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit the following annual report of this school for the fiscal year ended June 30, 1902.

Location.—The Muscowequan's boarding school is located about twelve miles from the Touchwood agency and Kutawa post office, on the northwest quarter of section 14, township 27, range 15. The ground on which the school stands is a piece of table-land surrounded by big sloughs.

Land.—The land connected with the school is a homestead of one hundred and sixty acres, and belongs to the Society of the Oblates. There is a large garden laid out in front of the house; trees are planted alongside of the former. On one side of the school a 'parterrre' surrounded with trees has been laid out.

Buildings.—The school-buildings include the old church, 24 x 56 feet, which now serves as a school-room, and a new stone house erected five years ago. This new building is 50 x 30 feet, two stories high with a basement, which comprises a large cellar, seven feet high, part of which is used as a root-house and dairy. On the first floor are: a kitchen, a small room for bake oven, a pantry, refectories for Sisters and pupils, two smaller rooms for visitors, a chapel where pupils assemble for morning and evening prayers. On the second floor: girls' dormitory, 27 x 28 feet, sewing room, play-room for girls, and Sisters' apartment; there is also a large and comfortable attic. The other part of the building, forming an angle, contains on its first floor, the class-room, on the upper floor is the boys' dormitory, 20 x 39 feet, airy and well lighted. There is no cellar under this part of the building. Various rooms in the house were kalsomined; walls and floor painted in kitchen, refectories, class-room and visitors' apartment. The other buildings are: the Reverend Fathers' house, the boys' play-room, carpenter's shop, stables and a windmill—erected during the past year at a cost of about $100—which enables us to cut fire-wood, crush grain and pump water in sufficient quantity for the daily needs of the house.

Accommodation.—This school has ample accommodation for fifty pupils and a staff of seven persons.

Attendance.—Thirty children attended school regularly during the year.

Class-room Work.—Classes in the morning and afternoon are taught. The school hours are from 9 to 12 a.m. and from 1.30 to 4 p.m. The programme of studies authorized by the department is strictly followed. Great attention is given to correct English conversation, writing, reading, arithmetic, spelling, drawing, geography and vocal music. Satisfactory progress in all the above mentioned subjects has been noticed during the past year.

Industries Taught.—The girls are trained in all branches of domestic work: baking, cooking, laundrying, sewing, knitting, dressmaking, rug-making and darning. All the children's clothing is made in the school. Gardening, haying, stable work, cutting and carrying wood, form the principal manual occupations of the boys.

Farm and Garden.—There is no farm attached to the school. We raise enough potatoes and there is an abundance of vegetables for our own consumption. We also keep ourselves supplied with milk and butter.

Moral and Religious Training.—Great care and special attention is given to this part of education, and no effort is spared to instruct our pupils thoroughly in principles of faith and religion. The conduct and general behaviour give great satisfaction, and it is a matter of surprise and pleasure to find how willingly they practise the lessons taught them.

Health and Sanitation.—The health of the children has been remarkably good, and the sanitary conditions leave very little to be desired.

Water Supply.—Water is supplied to the school from three wells, two on the premises near the school and one in the cellar under the kitchen, from which water is drawn by means of a force-pump, which conveys the water to a tank fixed near the roof of the building, from which the water-supply is distributed by means of iron pipes.

Fire Protection.—The school has been provided by the department with two Babcocks, twelve fire-pails which are always kept filled with water, fire-extinguishers and axes. All these are put in convenient places through the building. There are also the two force-pumps and plenty of hose for proper working in case of fire.

Heating.—The building is heated by seven stoves with wood fires.

Recreation.—In winter the pupils are supplied with different games, music, singing and outdoor exercise. In the summer months the boys take great pleasure in football, swings, croquet, archery, and gymnastic exercises; the girls in playing, singing and other games.

I have, &c.,

I. JACOB,
Principal.

NORTHWEST TERRITORIES,
McDOUGALL ORPHANAGE AND BOARDING SCHOOL,
MORLEY P.O., ALTA., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the above school for the year ended June 30, 1902.

Location.—The school with the land attached thereto is situate on lot eight Belanger survey, Morleyville settlement, near the confluence of the Bow and the Ghost rivers, and about four miles east of the eastern boundary of that part of the Stony reserve north of the Bow river.

Land.—The land owned by the school consists of the grant given by the government comprising one thousand one hundred and thirty-seven acres. The quality of the land is poor and not much adapted to cultivation, being mostly of a gravelly nature, and is mostly used for grazing purposes.

Buildings.—The main buildings are frame on stone foundations and consist of two wings, one of which, 38 x 44 feet, was erected in the fall of 1890, and the other, which is 26 x 40 feet, erected in the fall of 1900. The basements of the buildings are used for recreation-rooms in winter-time.

The school-room is also a frame building, 25 x 35 feet, on stone foundation and well ventilated, situate on the hill about 125 yards north of the main buildings.

Accommodation.—There is good and ample accommodation for forty-five pupils and eight members of staff.

Attendance.—The attendance for the year, in fact for the last four years, has been very good and almost as many pupils as the rule of health would allow, have been present.

Class-room Work.—The progress in this department is most satisfactory. The children under faithful management have done a great deal of work, and have been most faithful in their home work during the winter and spring evenings. These children acquire a knowledge of the English language very quickly, and in their studies in the school-room are very well advanced considering their age : they are mostly small.

Farm and Garden.—Our nearness to the mountains forbids anything like agriculture, further than the growing of a quantity of green feed for fodder for stock, and a limited quantity of vegetables. We have at present under cultivation about forty acres ; thirty acres of which are sown with oats, nine acres of wheat and one acre of brome grass.

Under the head of garden we have one acre of potatoes, one acre of turnips, half an acre of carrots and half an acre of small seeds. Most of these vegetables have been seriously damaged with the recent severe frosts.

During the last four years nearly eight miles of fence have been built, together with new sheds, corrals, yards and wood-house, 20 x 40 feet. This has been quite an undertaking, as our timber, rails, logs, &c., had to be hauled a distance of about seven miles.

Industries Taught.—The boys are taught in the various branches of ranching *i.e.* teaming, ploughing, fencing, mowing, milking, and the care of stock in general ; but as there are only three over fourteen years of age, they are to a great extent incapable of heavy work. They are very willing and as far as they are able are very trustworthy. The girls are taught efficiently in the various branches of housekeeping, sewing, knitting mending, cooking and laundry work ; as the majority of these are small, they have not as yet been able to render very much assistance.

Moral and Religious Training.—In every possible way both by example and precept have we tried to teach these children in the faith in which we believe, and we are thankful that our efforts have to a great extent been successful. Religious exercises are as follows : morning and evening prayers with reading of the Scriptures and singing, Sunday school, 11 a.m., service at 4 p.m. and song service Sunday evening at 7.30 p.m. The pupils have proved themselves very apt in the memorizing of the Scriptures and catechisms. Their morals are highly commendable. Cases of corporal punishment and truancy are almost unknown.

Health and Sanitation.—The health of the children during the past year has been better than the preceding one. During fine weather the children have been allowed as much outdoor recreation as possible. Dr. Lafferty has answered promptly to our calls and prescribed in every case of need. Altogether the health of the pupils is improving.

The sanitary condition of the school is very much improved

Fire Protection and Water Supply.—The only fire-protection that we have consists of four Babcock fire-extinguishers and twelve grenades.

All water used for the school has to be hauled about a quarter of a mile, and a water-lease of $50 per year paid.

Heating and Lighting.—The main building is heated by two wood furnaces and stoves. One of the furnaces (the one in the new wing is in good order and very satisfactory) requires repairs and attention.

The school-room is heated by a wood-burning box-stove. Wood instead of coal is used in the cooking range in the kitchen. The whole school is lighted with coal-oil lamps, which system is expensive and dangerous.

Recreation.—Care is taken that sufficient time is given for recreation, as we find that the health of the pupils largely depends on plenty of outdoor exercise.

General Remarks.—During the past year I have frequently visited the parents of many of our pupils in their homes, and I have been much gratified to note their loyalty to the school, and their willingness to help us as far as possible. Our agent, Mr.

H. E. Sibbald, has done all he could, and in every way possible to advance the interests of the school and pupils.

I have, &c.,

JOHN. W. NIDDRIE,
Principal.

NORTHWEST TERRITORIES,
ONION LAKE R.C. BOARDING SCHOOL,
ONION LAKE, July 10, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit herewith a report of the Onion Lake (St. Anthony's) Roman Catholic boarding school for the year ended June 30, 1902.

Location.—The school is situated on Seekaskootch reserve about twelve miles from Fort Pitt on the north side of the Saskatchewan river.

Land.—About five or six acres of land of the reserve are fenced in and set apart for the use of the school-buildings, playgrounds, &c.

Buildings.—The school is a frame building, 45 x 35 feet, three stories high ; exclusively for the use of the children. Another building, 25 x 20 feet, is the Sisters' convent. There is also a kitchen, laundry, storehouse, granary, hen-house and stable in separate buildings.

Accommodation.—There is good and comfortable accommodation for fifty pupils and a staff of ten persons.

Attendance.—The pupils being all boarders, the attendance has been regular.

Class-room Work.—The school hours are from 9 to 11.45 a.m. and from 1.30 to 4 p.m. The programme of studies laid down by the department is faithfully adhered to. The class work is done promptly, neatly, with good application and surprising emulation. Vocal music is also taught. The pupils form the church choir, which is good. They sing in Latin, English and Cree.

Farm and Garden.—About two acres of land are cultivated as a garden, and vegetables and flowering plants are successfully grown. Both boys and girls take part in the work under the supervision of a Sister. The produce of the garden last year was as follows : three hundred bushels of potatoes, thirty bushels of onions, fifteen bushels of beans, fifteen bushels of turnips, twenty-five bushels of carrots, six hundred head of cabbage, three hundred celery roots, two hundred pumpkins, leeks, vegetable oyster (salsify) and tomatoes.

Industries Taught.—All the general work required on the premises is performed by the pupils. The boys attend the horses and cattle, and prepare all the fuel. Last year seventy-one cords of wood were sawn and split. With the exception of washing, they have the entire care of their own rooms. They bake, help with the washing, do the cobbling required, and some are quite handy with carpenter's tools. The girls are carefully instructed in every detail of general housework. All the clothing for both boys and girls is made in the house.

Moral and Religious Training.—Careful attention is paid to moral and religious training.

Health and Sanitation.—The health of the children has been generally good; but so much sickness has prevailed throughout the whole country that necessarily we have felt it also. During the winter the pupils had measles and mumps, all were down with them at the same time, but with the best of care, good ventilation and cleanliness, just one month from the day they broke out all the pupils were perfectly recovered and able to go through the inspector's examination. In May the children all had influenza, one pupil died of the effects and another is lingering with little hope of recovery. Another pupil died of anæmia during the year and one was allowed to go home on account of scrofula.

Water Supply.—Plenty of good water is supplied from a well at a short distance from the school. The boys have a water-cart and a horse to draw it.

Fire Protection.—One well, ladders, stairs and galleries are our chief protection against fire. Fourteen pails, three axes and extra ladders are kept in convenient places. We have also two Carr chemical engines, but they are not loaded.

Heating and Lighting.—The buildings are all heated with stoves. Good temperature is maintained throughout. Coal-oil lamps light all the house. The lamps are suspended in brackets and hang one foot above the tallest pupil in the school. It is strictly forbidden for pupils to take lighted lamps out of the brackets. The lighting and putting out is in the director's charge.

Recreation.—The same attention is given to the children's recreation as to their other routine. Three hours of recreation are given each day; in summer one hour more is given in the evening. Boys and girls have each their own playgrounds and are always under the supervision of their teachers, who often take part, invent new games and award prizes to encourage and animate the games. In summer, football, baseball, lawn tennis, croquet, walks, swings, skipping ropes, bows and arrows, picnics and fruit gathering are the chief; in winter tobogganing and skating and indoor amusements according to their taste; the elder pupils prefer reading to all else; books, magazines and newspapers are furnished them by the teachers. Considerable time is given to prepare entertainments and concerts which the pupils give now and then to parents and friends of the institute. The exercises and rehearsals are done during recreation.

I have, &c.,

CYPR. BOULENE, O.M.I.,
Principal.

NORTHWEST TERRITORIES,
ONION LAKE C.E. BOARDING SCHOOL,
ONION LAKE, SASK., July 8, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit the annual report of the school under my charge in this agency.

Location.—The school is situated on the northeast corner of Makao's reserve and about three hundred yards to the southwest of the agency buildings.

Land.—There are, perhaps, twenty acres of land fenced in, connected with the school and mission, but I am unable to say for certain under what conditions it is held, as the land is included in the above mentioned reserve.

Buildings.—There are now two separate buildings used for class-rooms.

The first of these is a three-story log building, 24 x 30 feet. The ground floor is used only for a class-room, while the two upper floors are used as dormitories for the boys. There is no partition on any floor, except that on the second floor: there is a room, 10 x 12 feet, partitioned off in one corner, for the officer in charge of the dormitories and the boys.

The ceilings of this building are all ten feet or more from the floors.

The other building used as a school-room is also a log building, 20½ x 22½ feet, and two stories high. The lower floor is used entirely as a class-room for the junior classes. The upper floor is used as a sewing-room, with inclosed cupboards all round the walls, for keeping the children's clothes in, as well as unfinished material for clothing. In line with these buildings stands a storehouse, used for provisions principally, also with two floors, 15 x 20 feet, and near by is a two-story building, 23 x 26 feet. The lower floor is used entirely as a reading and recreation room for the boys. It is provided with washstand, towels, stove, lamps, &c., and is a very useful adjunct in our work, while the upper floor makes a fine large carpenter-shop. The three first mentioned buildings are all roofed with 'mica felt roofing,' which makes a very warm and nearly fire-proof roof. The carpenter-shop and reading-room is shingle roof.

The building which forms the quarters for the staff and the girls' dormitories is made up of several buildings put up at different times, and forming now one building 60 x 60 feet, with four outer doors, each of which gives ingress to any part of the whole building.

The whole lower floors are taken up with Indian room, principal's office, kitchen, bakery, laundry, sitting-room, dining-room, dispensary, medical officer's room, and pantries.

On the upper floors are the girls' dormitories, which consist of two entire floors, one 30 x 36 feet, the other 22 x 24 feet, without partitions, while in the angle where these two floors come together are the rooms of the ladies who have charge of the girls, and whose rooms give perfect command at all times of the girls' dormitories.

Ventilation and Fire Escapes.—All these buildings are thoroughly ventilated, from trap-doors in the roofs, chimneys, outer doors connecting with balconies and windows that lower from the top.

All buildings are provided with outside stairs and balconies in case of fire.

Lumber is now on the ground for the erection of a separate frame building, 24 x 30 feet, two stories high, to be used as a bakery and laundry, thus lessening the chances of fire.

Accommodation.—There is ample accommodation for eighty pupils and a staff of ten helpers.

Attendance.—All the children being kept in the home, the attendance is perfectly regular, except in the rare case of a child taking sick, and then they are away only for a very few days at a time. Only one death has taken place in nearly ten years of this work, and that not of an Indian child.

Class-room Work.—Very marked progress was made along these lines during the past year, especially in reading, writing, and speaking of English.

I have been especially fortunate in my choice of a head teacher, Miss Warren: her success is a very pleasing feature of the work.

Farm and Garden.—We only cultivate a small area of ground, about two acres, but on this patch we raise ample vegetables and roots for the supply of the whole school. The work is entirely done by the staff and scholars.

Industries Taught.—Carpentry and house-building, care of cattle, horses, pigs and poultry, milking and the care of milk, and making of butter and bread, are carefully taught the boys; while the girls are taught knitting, sewing, cooking, quilting, cheese and butter making, bread-baking and housework in general, and are proving themselves very apt scholars. Their sewing and laundry work are really very good.

Moral and Religious Training.—To this part of their education particular care and attention is paid. Each one of the staff fully recognizes that unless this part of their education is most carefully and conscientiously attended to, the other training they may get is only wasted or worse than wasted. We make very little attempt to teach the

tenets of any particular church, but rather teach them the 'old, old story' of Christ and the Cross. We prefer to place Christ first, they will always find the proper church for themselves. We have children in our school whose parents belong to at least four different denominations, and the children have been baptized in as many different churches, but while this school is under its present management all attempts at 'proselytizing' are sternly discouraged and will continue to be discouraged.

Health and Sanitation.—The health of the children is all that could be desired. Apart from the outbreak of small-pox over a year ago, and that of measles and mumps last November and December, both of which outbreaks we passed through without a single serious or fatal result, a case of sickness is indeed rare, and is never anything worse than some children's complaint for a few days. These facts speak for themselves as far as the sanitary condition of the place is concerned. Of course the fact of a doctor being one of the staff, and living on the premises and carefully watching every case, must account for some part of this freedom from disease or death in such a large institution.

Water Supply.—Our supply of water is ample and of an excellent quality. Four wells, one of them inside the house, adjoining the kitchen, give us plenty for all purposes.

Fire Protection.—Two small chemical fire-extinguishers, ten pails and three axes form all our protection, apart from constant watchfulness and care as to chimneys, stove-pipes, and the floors and partitions near any stove or stove-pipe. Then, as above stated, there is an outer door, balcony and stairway connected with every dormitory on an upper floor.

Heating.—All the premises are heated with wood-stoves, and in places where children might play with fire-coals, none but 'top draft' stoves are used, thus making it all but impossible for them to play with the coals, or for coals to drop on the floors.

Recreation.—The old 'standbys' cross-cut-saw and wood-pile, with football, base-ball, tennis and swings form the staple of their athletic exercises.

All of which is respectfuly submitted.

I have, &c.,

J. R. MATHESON,
Principal.

NORTHWEST TERRITORIES,
PEIGAN C. E. BOARDING SCHOOL,
PINCHER CREEK P.O., ALTA., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit my report on the above institution for the year ended June 30, 1902.

Location.—This school is built on the banks of Pincher creek, and is on the north-east quarter of section 12, township 7, range 29, west of 4th meridian.

The school is about two miles from the reserve.

Land.—The school owns forty acres of land, being legal subdivision 9 of the section above mentioned.

Buildings.—The buildings consist of a boarding school proper, a carpenter's shop, stable and other necessary buildings. The boarding school is 78 x 32 feet, 30 feet

over all. It is a frame building, and is lathed and plastered throughout. It contains kitchen, back kitchen, dining, play, and sleeping rooms for the children, and rooms for a staff of six, as well as store-rooms and lavatories.

Accommodation.—This school has accommodation for forty pupils, both boys and girls, also accommodation for a staff of six.

Attendance.—The attendance has been good, three boys have been transferred to the Calgary industrial school.

Class-room Work.—The children have made good progress.

Farm and Garden.—A good garden has been fenced in, consisting of about two acres, and a good crop was gathered.

Industries Taught.—The boys are taught baking, which they do for all the pupils, and the work on their own side of the house.

The girls are taught housework, and assist in the kitchen.

Religious Instruction.—Religious instruction is given both morning and evening by the principal, and everything is done to improve the morals of the pupils.

Health and Sanitation.—The health of the pupils has been good, with the exception of several who have, and are still suffering from, scrofula. There was one death during the year.

The sanitary conditions are good.

Water Supply.—All the water is drawn from a drive well in the kitchen.

Fire Protection.—There are four fire-extinguishers, which are kept always ready for use; this is all we have in the way of fire protection.

Heating and Lighting.—The building is heated by means of two large hot-air furnaces in the basement, and is lighted with coal-oil lamps.

Recreation.—The children have ample grounds to play in, and delight in all kinds of outdoor games and exercises.

I have, &c.,

W. R. HAYNES,
Principal.

NORTHWEST TERRITORIES,
PEIGAN R. C. BOARDING SCHOOL,
MACLEOD, ALTA., July 17, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit the following report of the Peigan Roman Catholic (Sacred Heart) boarding school, on the Peigan reserve, for the fiscal year ended June 30, 1902.

Location.—The school is situated on fine elevated ground on the north side of the Old Man river, a very healthy location, in the centre of the reserve and in close proximity to the agency buildings.—Sacred Heart Boarding School, Peigan reserve, McLeod, Alta.—is our address.

Land.—The land on which the school is built belongs to the reserve. About half an acre is fenced for a vegetable garden, in which we raise a fair crop every year.

Buildings.—The school-building consists of a large house, 84 x 26 feet, with an addition on the north side for a kitchen, 19 x 16 feet, a pantry, 17 x 14 feet, the centre building is 30 feet square, two stories high. The roof part is unfinished, and consequently unoccu-

pied. On the first story are the refectories for the boarders and for the staff, the parlour and a corridor leading from the front door to the kitchen. On the second story are the rooms for the staff, and a good-sized chapel.

On the west side we have on the first floor the class-room, the recreation-room for the boys, 25 x 14½ feet. On the second floor is situated the dormitory for the boys, 29½ x 25 feet. On the east side, is situated on the first floor, the girls' sewing-room, and the recreation-room. The second floor comprises the dormitory for the girls. Both sides are of the same size.

We have a small outbuilding, 18 x 17 feet, used as a laundry, also a coal-shed and chicken-house. We have just received a department grant for a laundry and coal-shed.

Accommodation.—The building affords accommodation for forty pupils and the staff.

Attendance.—The pupils of this institution are all boarders, and consequently the attendance is regular. Last year we had twenty-six pupils on the roll. Two girls were transferred to Dunbow industrial school, one girl went home sick and has since got her discharge ; two others were taken home by their parents and did not return, while another girl got married. We have received during the year one boy and two girls.

Class-room Work.—We follow the programme of the department. The progress is generally good and encouraging.

Farm and Garden.—Most of our children are too young to be of much use on a farm, but at special hours they help in the garden.

Industries Taught.—Our children have special hours every day for manual work. The boys work in the garden, keep clean their room and dormitory, scrub the floors, and do a little work around the house.

The girls are kept busy at general housekeeping, sewing, mending and washing clothes, helping in the kitchen, &c.

Moral and Religious Training.—Special attention is given to instruct our pupils in moral and religious truths. Catechism is taught every day by the reverend principal.

Health and Sanitation.—The health of the pupils has been generally good this year ; a few cases of scrofula were successfully operated upon last fall. The health of the pupils at present is fair.

Water Supply.—The institution has two wells, one a few feet from the kitchen, the other close to the garden. They furnish a sufficient supply of water for the establishment.

Fire Protection.—We have a fire-extinguisher, four fire-axes, and buckets full of water, which are always kept at convenient places.

Heating.—We use common coal stoves.

Lighting.—Coal-oil lamps are used and proper care is taken against danger by fire.

Recreation.—We have two recreation-rooms, well ventilated, one for the boys, the other for the girls. There is a nice prairie around the premises where the pupils play in fine weather, under the supervision of some of the staff.

I have, &c.,

L. DOUCET, O.M.I.,
Principal.

NORTHWEST TERRITORIES,
ROUND LAKE BOARDING SCHOOL,
WHITEWOOD, ASSA., AUG. 14, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my eighteenth annual report for the year ended June 30, 1902.

Location.—The school is situated in the Qu'Appelle valley at the east end of Round lake.

Buildings.—The buildings are frame on stone foundation. The main building is 24 x 54 feet, with one wing on the east side, 24 x 36 feet, also a wing on the west side 24 x 18 feet, all of which is two stories, with basement and cellars.

The school-house, 24 x 42 feet, two stories, contains the school-room, two class-rooms, teacher's room, farmer's room and boys' sleeping-room.

Accommodation.—The buildings contain accommodation for sixty or seventy children.

Sanitation.—The location is well drained towards the river and lake. Every impurity is removed and the surroundings kept clean. The sleeping-rooms are large and well ventilated.

Fire Protection.—Chemical fire-extinguishers, a good supply of water and fire-buckets are kept in position. The stove-pipes and flues are kept clean and in order.

Farm and Garden.—Two acres of land are cultivated for garden purposes, in which vegetables, &c., desirable for our school's use are cultivated.

Three hundred acres of land belong to the school; sixty acres of which are under cultivation. The rest is inclosed for pasture purposes.

Dairy Work.—Cows are kept and the boys are able to assist at milking with cleanliness and care.

Girl's Work.—The girls are taught all kinds of housework, baking, cooking, laundry work, sewing, knitting, mending, cutting and making up new garments.

Religious Instruction.—This is the most important department of our work.

Water Supply.—We have an abundant supply of water.

Heating.—The buildings are heated by wood stoves.

Class-room Work.—Our highest class has completed the programme of studies for Indian schools and is taking up more advanced work. Good progress has been made in all the classes.

General Remarks.—We wish to express our thanks to our Indian agent and to the department for the assistance given.

All of which is respectfully submitted.

I have, &c.,

H. McKAY,
Principal.

NORTHWEST TERRITORIES,
SARCEE BOARDING SCHOOL,
CALGARY, P. O., ALTA., August 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit herewith a report of the Sarcee boarding school for the year ended June 30, 1902.

Location.—The school is situated on the southwest corner of the reserve near the agency headquarters.

Land.—About ten acres are fenced in for school and mission purposes.

Buildings.—The school is under one roof. The boys' and girls' quarters are divided by the dining-room and kitchen which connects the two wings. The boys wing is 24 x 50 feet, two stories high. The girls' wing is 24 x 22 feet, also two stories. The dining-room, 18 x 25 feet, and the kitchen, 18 x 18 feet, have no upstairs.

Accommodation.—There is ample accommodation for thirty pupils: twenty boys and ten girls.

Attendance.—The number on the roll is fifteen, the full number for which a grant is allowed by the department. For a part of the year we had sixteen pupils in attendance.

Class-room Work.—This has gone on as usual. The girls are well advanced. The boys, most of whom have been admitted since last winter, are also making rapid progress in English and reading.

Moral and Religious Training.—This has the first place in all our work here, and we believe that the efforts put forth with the assistance of the staff have met with a great measure of success.

Health.—The health of the pupils has been better than ever. One pupil, who was in the school about four months, ran away and died suddenly in camp, probably from some head trouble. He often suffered from headache—we afterwards learned—before entering the school.

Fire Protection.—Barrels of water, buckets and axes are kept in convenient places. Two Patton fire-extinguishers are also on hand.

Heating.—This is done by stoves.

Repairs.—The dormitories were plastered during the year at the expense of the department. A suitable fence was also erected by a grant from the department around a portion of the buildings, thus making it less easy for the nightly incursions of the government cattle, to which we were formerly subject, especially when the garden stuff was ready for use.

General Remarks.—I wish to express appreciation of the agent's efforts in assisting us to get our full complement of pupils. It seems a pity that the school is not permitted the full number it will accommodate, especially when there are so many children of school age on the reserve who at present are running wild and who could be obtained with a little judicious pressure.

The staff consists of Mr. and Mrs. Percy Stocken, and Miss Crawford, who take great interest in the welfare of the pupils and labour incessantly on their behalf.

I have, &c.,

J. W. TIMS, C.M.S.,
Principal

NORTHWEST TERRITORIES,
SMOKY RIVER (ST. AUGUSTINE) BOARDING SCHOOL,
SMOKY RIVER, VIA EDMONTON, ALTA., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit herewith a report of the Smoky River (St. Augustine) boarding school for the year ended June 30, 1902.

Location.—The school is situated about ten miles above the Peace River crossing on the north side of the river and nearly opposite the mouth of the Smoky river.

Land.—The area of land connected with the school consists of about three hundred and fifty acres owned by the Oblate Fathers. Forty acres are under cultivation and on a portion of this land the school stands, but the entire property may be adapted to agricultural purposes.

Buildings.—The buildings are as follows: a two-story structure, 35 x 20 feet, the lower portion of which is entirely used for school purposes while the upper part is used as a boys' dormitory, provided this year with iron spring beds; a second building three stories high, 40 x 26 feet, has two wings each 26 x 15 feet and an addition two stories in height. The lower story is suitable for culinary work, and the upper story serves as a dining-room. In one of the wings of our main building is the chapel, and the other is used as a store-room. The dormitory for girls is in the third story, which forms the Sisters' residence: it is also provided with iron spring beds.

Accommodation.—There is accommodation for sixty pupils and eight Sisters.

Attendance.—The present attendance is twenty-two.

Class-room Work.—The Indian school programme for the Territories is followed.

Moral and Religious Training.—Careful attention is paid to moral and religious training. The conduct of the pupils being generally good, punishments are rarely resorted to.

Health and Sanitation.—We regret to report that in winter we suffered from an epidemic of influenza and six scholars died of it. Medicine and every care was given to the sick during this epidemic, even a vacation of a month was given so that they might rest. In the fall and the spring the children enjoyed perfect health.

Water Supply.—The river, which flows about one hundred and fifty yards from the establishment, furnishes an abundant supply of water.

Fire Protection.—Besides the Peace river, a creek that flows near the property is sufficient protection against fire.

Heating.—The heating is done by a hot-air furnace.

Recreation.—The pupils are allowed recreation three times a day, after each meal, when they indulge in the usual outdoor games.

I have, &c.,

SISTER SOSTENE,
Principal.

NORTHWEST TERRITORIES,
ST. ALBERT BOARDING SCHOOL,
ST. ALBERT, ALTA., July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit a report of the St. Albert boarding school for the year ended June 30, 1902.

Location.—The school is situated about nine miles north of the town of Edmonton, Alta. It is not on a reserve, but is situated in the St. Albert settlement, on the banks of the Sturgeon river.

Land.—The area of the land in connection with the school, and owned by 'The Corporation of the Sisters of Charity,' is three hundred and thirty-five acres, situated in township 54, range 25.

Buildings.—The buildings are as follows: main building, 180 x 35 feet, which is used by the staff and the girls; the boys are in a separate building, 50 x 30 feet. The outbuildings consist of a bakery, laundry, implement-shed, meat-house, ice-house, granaries, horse and cattle stables, besides numerous smaller buildings.

Accommodation.—There is accommodation for one hundred and eighty persons.

Attendance.—The average attendance is seventy, with an enrolment of eighty.

Class-room Work.—The public school programme for the Territories is followed.

Farm and Garden.—There are two hundred acres of land under cultivation, and with the exception of three hired men, the work is done by the boys.

Moral and Religions Training.—Careful attention is paid to moral and religious training. The conduct of the pupils being generally good, punishments are rarely resorted to

Health and Sanitation.—The health of the pupils was fairly good all the year, until an epidemic of measles visited the country, which broke out in the boarding school also. There were no serious cases.

Water Supply.—The water supply is obtained by a hot-air pumping engine, giving five hundred gallons of water per hour.

Fire Protection.—A tank of fifteen hundred gallons' capacity is in the attic; the water is forced there by a hot-air pumping engine, and from thence it is distributed throughout the buildings. Four fire-extinguishers, twenty-two grenades and three axes are dispersed about the halls (the latter articles were supplied by the department). We also have hose and six ladders on and around the buildings.

Heating and Lighting.—The heating is done by two hot-air furnaces and by stoves; lighting by coal-oil lamps.

Recreation.—Recreation is taken three times a day after each meal, during which the pupils indulge in outdoor games.

I have, &c.,

SISTER L. A. DANDURAND,
Principal.

NORTHWEST TERRITORIES, SASKATCHEWAN DISTRICT,
THUNDERCHILD'S (ST. HENRY'S) BOARDING SCHOOL,
BATTLEFORD, June 29, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit a report of Thunderchild's (St. Henry's) boarding school for the year ended June 30, 1902.

Location.—The Thunderchild's (St. Henry's) boarding school is adjacent to Thunderchild's reserve, on the Roman Catholic mission.

Land.—The land in connection with the school consists of the southeast one quarter, section 6, township 46, range 18, west of the third meridian, patented. This land is the property of the Roman Catholic missi n ; it is a plateau with nice groves and is about one mile distant from the Saskatchewan river. It is adapted for any kind of grain.

Buildings.—The school-buildings, 36 x 28 feet, contain one class-room, one refectory, two dormitories and the rooms required for the staff. There is a kitchen 14 x 16 feet. This building is the government's property, $2,500 having been paid by the department to erect it. It is not painted. In connection with the school-building there is a laundry, 12 x 16 feet, and a pantry, 8 x 8 feet. A new pantry, 16 x 3 feet, a shed, 12 x 16 feet, two summer-houses and a swing were built in May last. The cost of the whole is $400. These five last mentioned buildings are not the property of the government, as no grant was paid by the department for their completion.

Accommodation.—There are at present seventeen boarders, the building is capable of accommodating over twenty children in addition to the staff.

Attendance.—The average attendance for the June quarter was fifteen ; the number for which a per capita allowance is made by the government.

Class-room Work.—The subjects of study and instruction include reading, writing, arithmetic, grammar, drawing, singing , calisthenics and religions knowledge. Fair progress has been made.

Farm and Garden.—We have about fifteen acres of potatoes and other vegetables and grain under cultivation. The garden, well stocked with various kinds of vegetables, is in the boys' care. The milch cows, horses, pigs and poultry are kept by them also.

Industries Taught.—The girls receive instruction in cooking, laundry work, needlework and knitting. The young boys do their share in the above mentioned work.

Moral and Religious Training.—Every opportunity is taken to teach the pupils their moral responsibilities and to persuade them to practise civility, kindness, obedience, truthfulness and honesty. Religious instruction is given daily.

Health and Sanitation.—All the children are enjoying good health. The measles kept them in bed for a few days in January last, but left no ill effects. The sanitary conditions are very satisfactory. Underground drains carry off the water from the kitchen and laundry ; disinfectants are used where necessary. By means of an Eolian ventilator on the roof each room is excellently ventilated. The water-closets are kept clean, they are sixty feet from the house.

Water Supply.—The water is not abundant. A well dug at great expense gives us good water, but not sufficient for fire-protection.

Fire Protection.—We have on hand two Patton 'Star' glass-lined, chemical fire-extinguishers and three ladders.

Heating and Lighting.—Ordinary box stoves alone are in use for heating purposes, whilst coal-oil lamps supply the needed light. The lamps are in the Sisters' care.

Recreation.—The principal outdoor amusements are football skipping-ropes, racing, swings and games suitable to the age and condition of the children.

I have, &c.,

H. DELMAS, Ptre., O.M.I.,
Principal.

NORTHWEST TERRITORIES,
BATTLEFORD INDUSTRIAL SCHOOL,
BATTLEFORD, SASK., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—The following report, in connection with this school for the fiscal year just ended, is respectfully submitted.

Location.—The school is located on the south bank of the Battle river, about two miles west of where this river falls into the north branch of the Saskatchewan; it is about two miles due south of the town of Battleford, which is our post office; it is built on land specially reserved by the Dominion government for the use of this school.

Land.—The total quantity of land reserved is nine hundred and forty-three acres, of which five hundred and sixty six acres are in the immediate vicinity of the school, and three hundred and seventy-six acres, three miles to the east, reserved as hay-lands—from this latter portion we got our supply of hay. The land is all in township 43, range 16, west of the third meridian, and embraces parts of sections 15, 17, 18, 19 and 20.

Buildings.—These consist of the main building, in which the pupils and most of the members of the staff reside, and in which are situated the kitchen, dining-room, dormitories, dispensary, &c.; principal's residence, two cottages, one of which is used by married members of the staff and the other is kept unoccupied, so as to be available for isolating sick cases if required; carpenter-shop, blacksmith-shop, store-room, stable, pig-pen, laundry, bakery, hen-house, root-house, granary, warehouse and several small outbuildings.

Accommodation.—We have room to accommodate the full number authorized as far as class rooms, dining-rooms and dormitories are concerned; but we are cramped for wash-room, play-room and clothing-room for the boys.

Attendance.—Admissions during the year, five; discharges and deaths, nine; number on roll in June quarter, ninety; average attendance during the year, a little over ninety-three.

Class-room Work.—This is carried on by two teachers, each in a separate room. The course of studies prescribed by the department is followed. The attendance is on the half-time system as a rule, exceptions being made in the cases of the more backward pupils.

Farm and Garden.—We have about forty acres cultivated, of which about five acres is taken up with potatoes and various garden vegetables.

Industries Taught.—Farming and gardening, the care of horses and cattle, pigs and poultry, baking, blacksmithing, carpentering, kalsomining, painting, glazing, dairy work, laundry work, sewing, knitting, making and mending clothes, cooking and general housework, comprise the industries taught at the school.

Moral and Religious Training.—Morning and evening prayers on week-days, the regular services and Sunday school on Sundays, special prayer meeting every Wednesday evening, a circle of the 'King's Daughters' amongst the girls, and of the 'King's Sons' amongst the boys; and a 'Daily Scripture Reading Union' to which pupils of both sexes belong. These have been organized and carried on for several years and are proving to be strong factors in the moral and spiritual well-being of the pupils. The meetings of these societies are managed by the pupils, under the supervision of an experienced person. Our aim, as well as our daily prayer, is that 'true religion and honest industry may here for ever flourish and abound.

Health and Sanitation.—On the whole the health is good. We were, however visited by an epidemic of measles, in the early part of the winter, when it visited the greater portion of the whole country. This was followed by mumps, so that the year has been somewhat exceptional in that respect. We are careful in having swill and garbage and such like either burnt up or removed to a safe distance.

Water Supply.—We have a good supply of water in our wells.

Fire Protection.—We have a number of hand-grenades, Babcock fire-extinguishers, axes and pails placed in different parts of the building. There are four tanks in which a supply of fresh water is always kept, and, from the two upper ones pipes lead down to the lowest floor, and on each of the two lower flats there is a length of hose, with nozzle, attached to the pipe. A McRobie stationary fire-apparatus is also in the main building with a supply of hose connected with it on each of the flats. There is a fire-escape leading down from each dormitory.

Heating.—All the buildings are heated by furnaces and stoves, wood being the only fuel used, and of this we require from five to six hundred cords each year. We are having several new furnaces put in, in the places of the old ones which were burnt out—having been in use for about ten years—I am in hopes that the arrangement now made will save fuel and give more satisfaction in heating than hitherto.

Lighting.—Ordinary lamps with coal oil are all we have.

Recreation.—Swings, football, and other games, some gymnasium apparatus, and plenty of outdoor exercise.

General Remarks.—The members of the staff—in addition to the secular duties of their respective positions—assist faithfully in the moral and religious training of the pupils; and I take a very grateful pleasure in bearing testimony to the value of their efforts in this direction also.

Quite a number of our ex-pupils are earning an independent living, teaching in schools or working amongst the settlers, while of those who have returned to their various reserves, the most are doing as well as could be expected under the circumstances; they have a great deal to fight against; many of the old people are still bitterly opposed to any change from former customs, and so constantly work against all progress on the part of the rising generation in the direction of civilization and its methods. The strength required on the part of the young Indian to enable him to row successfully against this current of old prejudices and fixed habits is what we white men very inadequately, if at all, realize. It is, therefore, all the more pleasing to see, as we often do see, such perseverance in the case of the young who are educated in these schools, signs of a better life, evidence that the efforts made in their behalf are not in vain. By and by old things will pass away, and all things will become new, and will fall into line with the newer order of things which this country is destined soon to see.

I beg to thank the officials of the department for the kind, courteous, and generous treatment the work and the workers receive at their hands.

I have, &c.,

E. MATHESON,
Principal.

NORTHWEST TERRITORIES,
CALGARY INDUSTRIAL SCHOOL,
CALGARY, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report for the fiscal year just ended.

Location.—The school is situated on N.E. ¼, sec. 23, T. 23, R. 1, W. of 5th M., close to the Bow river, about five miles south of Calgary. This quarter section was presented to the Indian Department for the purpose by the city of Calgary; and this land was afterwards augmented by the purchase of the quarter-section adjoining on the north.

Land.—As one corner of our land extends into the Bow, the actual acreage is somewhere near two hundred and eighty acres. Of this, about one-fourth is all that is available for cultivation, the remainder being either hill with gravel close to the surface or swamp.

A spring creek runs through both quarter-sections affording good water for the stock.

There are practically no hay-lands at all on the school-site.

Buildings.—The main building remains unfinished. On the south side, which was left boarded up with rough boards, with six years' exposure, the wood is so warped and shrunken that it interferes most seriously with the heating. The rooms adjoining that wall are in severe spells almost too cold to live in. The last severe blizzard of last winter caused some of the furnace-pipes on that side of the house to burst.

The other buildings, with one addition, remain as last year; viz.:—

1. Farm instructor's house.
2. Stable with stalls for eleven cattle and two loose boxes for calves; also stalls for five horses.
3. Laundry and bakery; now occupied temporarily by principal.
4. Ice-house with meat and dairy cold storage.
5. Carpenter-shop.

The addition is a large open shed, sixty feet long, built of upright logs set in concrete, roofed with shingles, put up near the stable. This is for feeding young stock, &c., in winter; the dairy cows being stalled in stable.

Accommodation.—There is accommodation in the building for five members of the staff.

The accommodation for the pupils, if the department's regulation of four hundred cubic feet of air space per inmate in the dormitories is strictly adhered to, has almost from the first been overtaxed. We have had as many as forty-six at one time in the building, while the standard above makes the accommodation about thirty-five. One room is now reserved as a sick-room for pupils, for those who are indisposed, but not so seriously ill as to require hospital treatment.

Attendance.—We commenced the year with forty-six pupils on the roll, several of whom were at home on sick-leave. We close with a total of thirty-four, only one being at home.

Total number on register, July 1, 1901	46	
Admitted during the year	10	
Total		56
Discharged during the year		22
Total number on register June 30, 1902		34

I regret to say that several of the lads discharged on account of ill health have since died, mostly from tuberculosis in one form or another.

The general difficulty of obtaining pupils is felt with us very much. In theory we are supposed to be kept supplied by a continual transfer from the boarding schools, but it is hardly to be expected that the principals of some of those schools will, without regret, lose those who are often their brightest pupils, to say nothing of the loss of the grant involved. We have received in transfer all the available pupils from the Sarcee and Peigan boarding schools.

Class-room Work.—Mr. Mills still occupies the position of teacher. The work apparently suffers by comparison with former years, but it is only apparent. The general character of the school work does not show up so well, owing to the compulsory discharge of our elder and brilliant pupils. This leaves us with the more backward ones, and those since admitted do not appear to come up to any high standard in school work.

Industries Taught.—*Carpentry.*—Mr. Pippy is still carpenter instructor. The work this year has been confined mostly to general repairing. Our best carpenter boys have been discharged, some of whom are turning the knowledge learnt here to good account. Several of them, amongst them being the son of the chief of the reserve, assisted in erecting the new agency buildings on the Blackfoot reserve.

Printing —This is an additional industry this year established without any cost to the department whatever. The synod of the diocese of Calgary has expended about $500 in supplying a full plant and equipment for our use, on condition that we do the actual work of printing a small monthly diocesan magazine, all materials, &c., being supplied for the purpose.

Several of the lads are showing great aptitude in the work.

Farm and Garden.—Mr. Young is still in charge of this division. The cold spring, with the excessive quantity of rain, has made our crops very backward, in common with those of the district. With a fine, dry and hot fall, they should, however, result fairly satisfactorily. Potatoes are promising well.

Our stock are all in good condition and are increasing rapidly in numbers. We purchased two cows in 1897 and two in the following year—and have now a herd of twenty-six, besides having killed one steer for beef last fall.

Fire Protection.—This remains as heretofore. Two tanks in the attic connected with each flat by an iron pipe and hose ; and interior chemical arrangement, McRobies, with hose on each flat ; fire-pails and ' Star ' extinguishers conveniently placed, constitute our whole protection.

Water Supply.—The water in the well remains sufficient and good. The well is close to the main building, from which the water is pumped to the tanks in the attic by a hot-air pumping engine. This latter, after six years' thorough testing, I begin to look on with disfavour. It seems to be continually getting out of order, and I think a double-wheel hand double-piston pump would work as satisfactorily.

Health.—The health of the pupils as a whole has been fairly satisfactory. We were quarantined for six weeks this spring for what the health officer considered small-pox. There seems to be some doubt as to the correctness of the opinion, but the three boys affected quite recovered and must have had a very slight attack.

Conduct.—The conduct of the pupils has been satisfactory. With the exception of the usual boyish pranks, no very serious breaches of discipline have been noted.

General Remarks.—It must be recorded that, at the visit of the Duke and Duchess of York to Calgary, the address of the Indians was read by a pupil of this school—David Wolf Carrier—a Sarcee. It is with deep regret that I have to say that David developed phthisis this winter and has since died.

In conclusion, while we have our own peculiar difficulties in this school, I think the work is progressing, and the record of some, at least, who have left us, is full of encouragement for the future.

I have, &c.,

GEO. H. HOGBIN,
Principal.

NORTHWEST TERRITORIES,
QU'APPELLE INDUSTRIAL SCHOOL,
LEBRET P.O., August 6, 1902.

The Honourable
The Superintendant General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my report for the fiscal year ended June 30, 1902.

Location.—This school is situated in the Qu'Appelle valley, four and a half miles east of Fort Qu'Appelle and eighteen miles north of the Canadian Pacific railway; though twenty-four miles from Qu'Appelle station by the trail. It is not situated on an Indian reserve, but is in a central position for the Assiniboine, Crooked Lakes, File Hills, Muscowpetung, Touchwood Hills and Sioux reserves.

The site is picturesque, the buildings being on a slightly elevated flat between two large bodies of water; fronting to the west and south on the Qu'Appelle lake with the village of Fort Qu'Appelle in the distance, to the north are steep hills of irregular formation some three hundred feet high, divided by a broad, wooded valley running in a northerly direction, and containing a small creek, while the eastern view presents the Katepwe hills and lake in the distance and in the immediate vicinity the village of Lebret.

Land.—The area of land belonging to the school and immediately surrounding it comprises about six hundred and fifty acres; it was specially surveyed and reserved for the purpose by the Department of the Interior, and is made up of parts of sections 2, 10 and 11, township 21, range 13, west of the 2nd meridian. Of this land about one hundred and fifty acres are under cultivation in three fields and two gardens, the remainder, consisting of hills and broken land, is only fit for grazing.

Besides the above, and about six miles northeast of the school, we have three quarters of sections reserved for hay purposes, of these the northeast ¼, section 34, township 21, range 13, west of the 2nd meridian, was bought by the department, and has about seventy-five acres of land under cultivation, the remainder is cut up by shallow sloughs, which yield a fair quantity of hay in wet seasons; the other quarter-sections are the northwest ¼, section 34, township 21, range 13, and the northwest ¼, section 22, township 21, range 13, both west of the 2nd meridian. These are mostly scrubby and rolling, and supply a fair quantity of hay in wet seasons, besides a valuable winter grazing ground for horses not in use.

All the above parcels of land are fenced in with barb wire.

Buildings.—The main block is frame, brick-veneered, and is composed of three adjoining three-storied buildings, viz., the boys' building, 90 x 70 feet, with gymnasium addition on the north, 35 x 80 feet; the girls' building, 80 x 50 feet, joins the boys' at the southeast corner, and the small children's and hospital building, 60 x 40 feet, is connected with the girls' building at the southeast corner.

Basements extend under most of the buildings and contain the heating plant and pumping engine, large coal-bins, and store-rooms for roots and vegetables.

The first floor of this block is divided into class-rooms, dining hall, recreation-rooms, parlours, kitchen, pantries, lavatories and halls. The second floor consists of dormitories, sewing-rooms, offices and lavatories. The third floor includes chapel, hospital, doctor's dispensary, dormitories, employees' rooms, store-rooms and tanks for domestic and fire-protection purposes.

Connected with the main building and built of lumber, not yet veneered, are the Indian reception-room, ice-house, provision-store, fire-engine-house and girls' closets.

The following buildings, separate from the main building and from each other, are of frame construction, and stand in two rows on a lane running north and south: wind-

mill for crushing grain and sawing fire-wood, with addition erected this year for power-house and dynamo of electric light plant, boys' closet, sheds for coal, lime and general storing purposes, bakery and floor-store, carpenter-shop and lumber-shed, blacksmith-shop with tin-shop above it.

North of these buildings and of the main roadway that runs east and west and forming three sides of the barnyard, are the stables, barns, granary, pig-sty and implement-sheds.

Accommodation.—The accommodation is ample for two hundred and twenty-five pupils, the number authorized; but we find it limited for the staff.

Attendance.—The attendance for the year has been good and averaged one hundred and three boys and one hundred and twenty-one girls; a total of two hundred and twenty-four; several of these, being under age, draw only half the per capita allowance.

Class-room Work.—Of the two hundred and twenty-two pupils enrolled at the end of June, one hundred and two were boys and one hundred and twenty were girls. The grading under the schedule of studies prescribed by the department was as follows:—

	Boys.	Girls.	Total.
Standard I	20	30	50
" II	8	26	34
" III	40	35	75
" IV	22	24	46
" V	12	5	17

The first and second standards attend class six hours each school day when practicable, in order to become as proficient as possible in the use of the English language before learning any industry. The higher standards attend class half each day, and work at trades the other half day as a rule. In busy seasons on the farm and garden all the boys are engaged the whole day at outside work under the supervision of their teachers.

Farm and Garden.—The area we have under cultivation this year is three hundred and fifty-eight acres, made up as follows: one hundred and fifty-three acres of wheat, fifty acres of oats, twenty-five acres of oats for green fodder, seventeen acres of brome grass, twenty-four acres of rye and brome, twelve acres of barley, two acres of pease, eight acres of potatoes, two and a half acres of turnips, half an acre of mangolds, sixty acres of summer-fallow and four acres in garden. Beside this we have a half share in sixty acres of wheat and a three-quarters share in eighteen acres of wheat, put in on land belonging to neighbours but nearer to the school than much of our own crop.

Fifteen boys worked on the farm most of the year. An assistant farm instructor was employed, it being impracticable otherwise to do efficient work, as our fields are some miles apart. Besides the regular farm-boys, and boys and girls whose turn it was to milk, the whole school assisted when necessary on the farm and in the garden.

Our crop last year was very satisfactory and consisted of six hundred and fifty bushels of barley, and two thousand two hundred and fifty-seven bushels of oats, one thousand nine hundred bushels of potatoes, one thousand and eight bushels of turnips, one thousand five hundred and seventy-four bushels of wheat, five hundred bushels of mangolds, one hundred tons of hay and green fodder besides what was used till threshing time in November. We had an abundance of garden stuff, comprising rhubarb, corn, onions, beets, parsnips, cabbage, pumpkins, citrons, melons, currants, tomatoes, asparagus, pease, lettuce, celery and quite a lot of plums.

The appearance of the growing crops promises an abundant harvest, though they are two weeks later than at this time last year.

Stock.—Our stock are in good condition and comprise one bull, sixteen cows, six heifers, one steer, four calves, fifteen Canadian horses and mares, and two Canadian colts, five native horses and mares, three native colts, thirty-eight swine and a lot of poultry.

Industrial Work.—(1.) *Blacksmith's Shop.*—Six boys worked at this trade and did a good deal of custom work, besides all required for the school.

(2.) *Shoe Shop.*—Nine boys assisted the shoemaker making and repairing boots and harness.

(3.) *Bake Shop.*—All baking for the institute is done here, besides which the baker and his assistant boys pickle pork, provide the house with ice and cut meat into suitable sizes for the kitchen.

(4.) *Carpenter Shop.*—Eleven boys were attached to this shop, as next to farming this is the most useful industry they can acquire. A great variety of work was done both for the school and outsiders in carpentry, cabinet-making, repairing vehicles and implements, and contracts were taken for the erection of a large stable, house and several granaries, besides the erection of a new dairy, stable, small house, and addition to the windmill for power-house, and dynamo of electric light plant for the school.

(5.) *Paint Shop.*—The furnace and night watchman instructs the boys in this department; as we are short of big boys, and it is unlikely any will follow this trade for a living, none are permanently attached to this shop. Besides doing the painting, plastering, stone and brick work, the fire-appliance is kept in working order by the furnace and night watchman.

(6.) *Tinsmith Shop.*—Usually some of the blacksmith boys work with the tinsmith when he requires any help. Besides doing the tinsmithing and plumbing for the school, he attends to the wood-sawing and the gasoline pumping-engine.

Girls' Work.—Under direction of the reverend Sisters the girls learn all kinds of housework, cooking, dairying, laundry work, and make their own clothes and greater part of those worn by the boys. They assist in the garden, milk the cows in the summer time, and have entire charge of the poultry.

Moral and Religious Training.—All the employees are required to set a good example and develop as much as possible a sense of responsibility in the pupils. The assistant principal and teachers attend specially to their moral training and manners. On Sundays and every day during winter months, I hold a class for the whole school, when I give religious instruction for one hour after class hours. Chapel is attended night and morning daily, and the Lebret church morning and afternoon on Sundays.

Conduct.—The conduct is very satisfactory.

Discipline.—As there is a regular system and efficient staff, there is no trouble in maintaining order.

Health and Sanitation.—Considering everything, the health has been good. We had a few cases of chicken-pox and pneumonia with the usual minor complaints, but had rather a severe type of measles which left many of the children very weak and caused at least three deaths by developing other complications. We were quarantined for nearly two months for small-pox as a preventive measure, but I am thankful to say we had no cases in the school, though most of our nearest neighbours had cases and nearly every half-breed house in the district had some cases. The physician in charge inspects frequently, and conditions conducive to health are maintained by an abundant use of vegetables and wholesome food carefully prepared; by cleanliness of person and premises; by clothing adapted to the season, and by plenty of outdoor exercise, drill and calisthenics. Ventilation and sanitary conditions are good.

Water Supply.—Our water-supply had not been very satisfactory during the previous year, as besides being impure it contained a great deal of fine sand. The continuous pumping away of this sand had caused the foundation in the centre of the building to settle, so we opened a new well and drove a four inch iron pipe below the water-supply, and now have an abundance of good water, and it is of a much softer kind than in the old well. Water for fire-protection and domestic use is supplied by a one and a half horse-power gasoline engine that is giving very good satisfaction.

Fire Protection.—Our fire-protection appliance consists of three fireman's axes, one Babcock extinguisher, fifteen chemical extinguishers of different makes, ninety-two hand-grenades, thirty-five pails, all under the supervision of the fireman and night watchman. Large tanks in the garrets of each of the three buildings provide a large quantity of water, and are always full and are connected with discharge pipes that have connections, and fifty feet of hose on each floor of the boys' and girls' buildings. Ample

means of escape are provided by ten stairways on the first floor, six stairways on the second floor, and two stairways to the garrets, where no one sleeps. There are always several ladders in serviceable condition at the carpenter's shop.

Heating and Lighting.—Seven hot-air furnaces, supplemented by a few stoves, heat the main block very comfortably; the shops are heated by stoves. Lamps burning coal oil and acetylene gas supply the light. A first-class electric light plant driven by a gasoline engine was installed during the winter, but the quarantine for small-pox, measles, &c., in the spring delayed matters so much that we have used the light very little; the high cost of gasoline with freight, haulage and leakage added, makes the electric system cost nearly three times that of our old coal oil and acetylene system, and our finances can scarcely stand such a strain.

Recreation.—In outdoor games our boys have been successful in football and athletic sports; they have a large playground and roam about the surrounding hills. The girls have a large tree-shaded playground, with swings, seats and other means of recreation. In summer-time both boys and girls enjoy bathing in the lake, and in winter time they skate upon it. Both boys and girls use the gymnasium. The library books are well patronized. The indoor games in vogue are those usually found in white schools. The brass band is an attraction and is under the instruction of the teacher of the boys' junior division. The boys and girls are generally fond of music. Several public entertainments were given to appreciative audiences.

Admissions and Discharges.—Twenty-five children were admitted during the year: ten boys and fifteen girls. Twenty-nine pupils were discharged, eleven boys and eighteen girls; of these some were married, some are building and preparing homes, and breaking land, and some are living with parents; we have three pupils, girls, on the roll, eighteen years of age, but they are at service and we do not draw any grant for them.

Ex-pupils.—The majority of those who are able to, have a home of their own; many are hard-working, thrifty and progressive, and are turning to profitable account the training they have received. Without means to start for themselves, the progress of some is very uncertain after leaving the routine and discipline of the school and depends very much on their environment whether they marry and settle down or return to their parents. If the parents are not industrious, they exercise a detrimental influence over the pupils and it would be better if they could be kept separate.

Those on the File Hills reserve have broken a large acreage of new land and have besides a considerable crop this year. A great obstacle to their perseverance in civilized habits was the Indian dance, which is now done away with entirely in the Qu'Appelle agency and to a great extent in the other agencies. We have several of the second generation in school and they are mostly bright pupils.

General Remarks.—Good reports continue to be received of our out-pupils; the girls in service command the highest wages in the best families.

A very large number of visitors from all parts of the world, breaking their trans-continental journey and attracted by the rich farming country, the shooting and hunting, or the beautiful scenery of the Qu'Appelle district and lakes, paid a visit to the school.

About two hundred pupils spent two days at the File Hills agency on the occasion of the fourth annual agricultural fair, held there by the Indians in July, under the auspices of their agent, Mr. Graham.

In conclusion I would say that the Indian agents on the surrounding reserves have given me great assistance; that when there has been any necessity for their services, the Northwest Mounted Police have always been prompt and efficient; and that my present staff and employees are performing their duties in a satisfactory manner.

I have, &c.,

J. HUGONARD,
Principal.

NORTHWEST TERRITORIES,
RED DEER INDUSTRIAL SCHOOL,
RED DEER, ALTA., July 17, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report for the year ended June 30, 1902.

Location.—The school is situated on the north bank of the Red Deer river, about three miles due west of the town of Red Deer, Alberta. The school is not upon a reserve.

Land.—The land, which is first-class in quality and suitable for mixed farming, consists of three-quarters of section 14, township 28, range 38, west of the fourth meridian. We have also a lease of six hundred and forty acres, for grazing purposes, and six hundred and forty acres reserved for hay-land. The hay-lands are still under water, the very heavy rains of the last few years have flooded most of the low-lying meadows, making them of no value for hay-making.

Buildings.—The buildings are as follows :—

A stone building occupied by the female members of the staff and the girls. This building also contains the office and inspector's room.

Brick building, occupied by the boys.

Dwelling-house, occupied by the principal.

Two cottages, occupied by the assistant principal, the farm and carpenter instructors, blacksmith-shop, used at present as a store-room ; carpenter's shop ; ice-house and refrigerator combined ; pig-pen, two well-houses, cow-stable, horse-stable, hen-house, storehouse, engine-house, and three closets.

Accommodation.—We have accommodation for ninety pupils and a staff of ten.

Attendance.—There has been an average attendance of sixty-two during the year, although the number authorized by the department is eighty. I shall be glad if some means can be devised whereby parents will be persuaded to allow their children to be sent to this school.

Class-room Work.—The progress in the class-room has been moderate. The pupils are graded as follows :—

Standard	I	16 pupils
"	II	20 "
"	III	14 "
"	IV	11 "
"	V	4 "
		65

Farm and Garden.—We have one hundred acres under crop as follows : oats, sixty-three acres ; barley, ten acres ; speltz, two acres ; garden, ten acres ; green feed, ten acres ; and hay, ten acres.

The farm is rather rough and covered with bush, but the quality of soil is first-class, unfortunatly the land lies rather low and for the past fews years is rather wet, it being almost impossible to drain. The crop of last year on account of the wet was not very good.

All boys take a turn on the farm. At present sixteen boys are engaged.

Industries Taught.—*Carpenter Work.*—During the year four boys have been engaged in the carpenter's shop. They have finished the attic in the main building, have made some alterations in one of the cottages, and done all the repairs.

Housework and Sewing-room.—All girls are taught housework, butter-making and sewing. I am pleased to say that they make good progress. The conduct of ex-pupils who are domestic servants continues to be satisfactory.

Moral and Religious Training.—Religious services are held each Sunday, when the great truths of right, truth, honour and work are plainly taught.

The endeavour of all is to train the children to be good : we feel that without this, all our teaching will be lost.

Health and Sanitation.—The general health of both staff and pupils has been good. Last summer we had an outbreak of small-pox, but by prompt action the disease was not permitted to spread. The sanitary condition is good.

Heating and Light.—The heating has been satisfactory. We have two furnaces made by the Smead-Dowd Company and two furnaces made by the Pease Company. The cottages are heated by stoves.

The school is lighted by coal-oil lamps.

Recreation.—Football still continues to be very popular, the boys play a good game, while the girls swing and skip. Both the boys and girls enjoy outdoor games.

Staff.—The staff as a whole have performed their duties in a satisfactory manner. Dr. Donovan has been as usual most attentive.

General Remarks.—During the past year I have seen most of the ex-pupils of this school, and I have received reports from the Indian agents regarding almost all. I am pleased to be able to say that in almost every case progress is being made and the percentage of those who are shiftless and useless is very small.

I have, &c.,

C. E. SOMERSET.
Principal.

NORTHWEST TERRITORIES,
REGINA INDUSTRIAL SCHOOL,
REGINA, ASSA., Sept. 18, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the annual report in connection with this school for the year ended June 30, 1902.

Location.—The school is situated on the north half of section twenty-eight, in township seventeen, range twenty, west of the second meridian. The site is a beautiful one, situated as it is on the high banks of the winding Waskana, toward which, on the east, the ground gently slopes.

This affords good opportunity for drainage, and commands a splendid view of the country for many miles around. The Territorial headquarters of the Northwest Mounted Police, Government House, the Legislative buildings and the town of Regina are all in full view from our grounds in front of the main building, while on a clear day the busy Canadian Pacific trains can be seen almost continuously for twenty-five miles of their way, so level is the country.

Our hundreds of young trees and the shrubbery, artistically arranged by our late farm instructor, Mr. Grant, have greatly improved in size and appearance during these two moist seasons, so that the grounds present a very attractive appearance.

Land.—One half section was purchased for the school, and besides this the school section lying immediately west of us has been leased by the department for a pasture.

With the exception of ten or twelve acres cut up by the creek, our school half section is all good arable land. About two hundred and fifty acres are under cultivation, while the whole is well fenced and generally in a well kept condition.

Buildings.—The main building is solid white brick resting on a fine foundation of dressed sandstone, and consists of two flats besides a splendid basement, eight feet high, and an attic. The basement furnishes ample room for our seven Smead-Dowd furnaces, as well as for a good store of fuel, a neat little dairy, and winter play-rooms for boys and girls.

On the first floor are the following rooms, all adequate in size and well lighted: assembly-room, sometimes used as a class-room and recreation-room; large central hall and two smaller hall-ways on the boys' and girls' sides respectively, reception-room, office, medical dispensary, photographing-room, senior and junior class-rooms, pupils' dining-room, kitchen, sewing-room, scullery, pantry and kitchen store-room. On the second flat are two large dormitories situated in the extreme north and south ends of the building, a little boys' dormitory in the west wing, three corridors, two bath-rooms, two wash-rooms, three clothing store-rooms and ten private rooms for teachers. In the attic are four store-rooms for winter clothing and bedding, a general store-room, a large water-tank and a way of access to two smaller ones.

Besides the main building there are the following buildings on the grounds: principal's residence, brick-veneered; cottage hospital, frame, one story; farming instructor's cottage, frame, one story; trades building, frame, two story, containing paint-shop, shoe-shop, hardware store-room, printing office and carpenter-shop, with lumber-house attached; two implement-sheds, frame; cow-stable, frame; horse-stable, frame, with stone basement; hen-house, frame; hog-pen, frame; two pump-houses; bake-shop, containing large brick oven, and grocery store-room; blacksmith-shop, frame; ice-house, frame, containing refrigerator; granary, frame; two root-houses; garden tool-house, frame; lumber-house, frame; grain crusher house, frame; two outside water closets; a band-stand, and a toboggan-slide with store-room underneath.

During the year a new root-house, with a capacity of about a thousand bushels, was attached to the cow-stable for the storage of roots to be fed to the cattle. New floors and a boiler-room were placed in the hog-pen. Almost the whole of the sewer system was taken up, repaired and fitted with man-holes to facilitate flushing. Sewer connection was made with the laundry, also putting the surroundings of that building in a much more sanitary condition. A new solid concrete bed was put under the pumping engine, and the engine-house rebuilt and made frost-proof. Extensive improvements were made on the heating and ventilating system including three large smoke-stacks to carry the furnace smoke through the ventilation shafts for the purpose of heating the latter, and promoting quick circulation and arrangements for quickly changing the Smead-Dowd circulation into the ordinary internal circulation during cold weather. The result has been that we can now get all the heat we want out of the furnaces with plenty of pure air and at the same time we saved something like $450 worth of fuel in one winter. A 'nest-room' for boys' good suits was also built connected with the boys' dormitory, which has done much to save clothing and to develop a habit of neatness in the care of clothing.

The outside woodwork of the main building received two good coats of paint, also a large part of the building inside. Some of the rooms have neat stencil borders done by the boys, who also made some of their own stencils. All the above mentioned improvements, as well as extensive repairs to vehicles and implements, were made by the boys and their instructors with the exception of some deep digging and some brick-laying.

Accommodation.—The average attendance for the year was ninety-four and a quarter. During the year we have discharged seventeen pupils, and obtained thirty-four recruits: twenty boys and fourteen girls.

Class-room Work.—The regular school-room hours are from 9 a.m. to 12 noon, and from 1.30 p.m. to 4.30 p.m. All the older pupils spend half of each day at school-room work, and half at some kind of industrial work, excepting during holidays, and in the case of occasional emergencies when they are sometimes asked to work all day. But an effort is made during the less busy seasons to give all an opportunity to make up for lost time in the school-room. Small children and backward ones attend school all day.

Two school teachers have been regularly employed since October last, both of whom are duly qualified and thoroughly trained in the most modern methods. Miss Cornelius, our junior teacher, is a full-blooded Indian girl of the Oneida tribe. She is a graduate of Hampton industrial institute, Virginia, and has more than sustained the very high reputation given her by the staff of that institution. Mr. Bayne, our senior teacher, has not only made his work popular among the older pupils, but is steadily raising the standard of the school work under his charge. In addition Mr. Bayne edits 'Progress.'

The pupils are arranged in classes, according to the schedule prescribed by the department, as follows :—

	Pupils
Standard I part I	25
" I " II	10
" II	8
" III	31
" IV	15
" V	14
	103

Farm and Garden.—From farm and garden last year we produced seventeen hundred and thirty-eight bushels of wheat, (averaging thirty-eight and one half bushels to the acre), nine hundred and seventy bushels of oats, besides a lot fed in the sheaf—twelve hundred bushels of potatoes, sixty bushels of carrots, one hundred and seventy bushels of turnips, twenty-five bushels of beets, four hundred heads of cabbage, forty loads of brome-grass hay and fifteen bushels of onions, besides what vegetables were used on the tables fresh.

The acreage of crop this year is as follows : wheat, forty-five acres ; oats, thirty-six acres ; brome-grass, fifty acres; potatoes, three and one-half acres ; garden, three acres ; and rye-grass, two acres. Besides we have a summer-fallow of forty acres, and five acres of new breaking ready for wheat next year.

The plot system has again been adopted in the garden with good results, and has been extended to the smallest pupils of the junior department. The plan of each pupil having his or her own plot to sow and tend is peculiarly well fitted to impress the lessons given. For example, nearly all the pupils this year, in spite of repeated warning, planted the garden seeds too thickly, but will not be likely to do so next year after the amount of extra labour they had to do thinning out. This well illustrates how true is the maxim, 'Learn by doing.'

The farm stock consists of nine cows, one heifer, three calves, seven horses, three colts, four mares, thirty-six pigs, one boar, and forty-six hens.

Industries Taught.—Besides farm and garden work, instruction is given the boys in carpentry, painting, glazing, baking, printing and blacksmithing. In all these lines the instructors seek to utilize the educational elements in manual work, recognizing that problems in wood or iron, in plants or animals, not only peculiarly fasten attention and stimulate thought, but train the powers of observation more than class-work. Since this is distinctively a farming country, we only encourage those who have a very marked genius for a trade to go further in it than to make them handy enough with tools to do common building and repairing on their own farms.

The girls are taught general housework, not only in the school but in taking the responsibility in turns of cooking and housework in the private resi'ences. They are also given instruction in dairying, laundrying and dressmaking, including cutting and fitting. Lace-making has also been introduced and has proven to be very popular under the instruction of Miss Cornelius, (who gives lessons in this, in vocal music, and in gardening, in addition to her regular school-room work). Some of the girls have become quite expert in pillow lace making, one girl having in one case earned $1.50 in ten hours. This industry is peculiarly adapted to be an educational factor. It requires small outlay for equipment and little for material, while the product commands a good price. It can be successfully carried on in a teepee, but it cannot be successfully carried on without clean fingers, and this means clean clothes and clean surroundings. It

demands accuracy, a most important thing to cultivate among our pupils, and is a peculiarly good means of developing artistic taste. Most of the girls are very fond of it and in a wonderfully short time become adepts. We have one little girl of twelve, Annie Seeseequasis, who watched the work for a short time, asked to be allowed to try a difficult pattern being worked by one of the older girls, and without the preliminary lessons in the various stitches went right on doing almost perfect work.

Both boys and girls have greatly enjoyed practical and theoretical lessons given by Mr. Wilson, Government creamery inspector, and Mr. Newman, Government butter-maker, at Regina, and we see many proofs that their talks on the care of milk, &c., are not forgotten.

Moral and Religious Training.—Moral and religious training and religious instruction is given by the principal, or his assistant in his absence, at two services each Sunday, and at morning and evening prayers each day. Nearly all the staff assist in Sunday school work. Besides, the Bible is read daily in the school-room, and every opportunity is utilized for the fastening of moral and religious truths in the minds of the pupils, as well as to show their bearing and results in practical work. By earnest appeals to pupils in public and private, and by strict but kindly discipline, we seek daily to build up steady, strong Christian character. Every means possible is taken to impress specially upon the pupils that the best proof that they can give of the reality of their religion is the self-sacrificing efforts that they make for the betterment of their own race.

Health and Sanitation.—The general health of the pupils has been fairly good during the year as a whole, although, on the reserves and in other schools, last winter seemed to be a peculiarly trying one to Indians. We had two deaths in the school from tuberculosis and one from heart disease. All pupils are weighed and measured monthly as a means of detecting lowered vitality, or the first beginnings of disease, and those failing to show some slight gain are watched carefully and means taken to stimulate them. An experiment has been tried of putting such cases out to sleep in tents during the summer with good results. Drill and calisthenics conducted by Sergeant Simpson, Mr. Mars and Miss Cornelius, also have produced good results.

The improvement in the sewers and ventilating system have greatly improved the sanitary condition of the building.

Water Supply.—The water-supply continues to be very satisfactory and little trouble is now experienced with the hot-air pumping engine which supplies abundance of well water for household use and fire-protection. A good supply of rain-water is saved in large tanks, one under the laundry-building, and one in the basement under the kitchen. The latter was added during the year and has proven a great boon in the kitchen.

Fire Protection.—Our three large tanks in the attic are kept constantly filled with water and the hose-reels in different parts of the building connected with these furnish good fire-protection. In addition we have a McRobie chemical fire-engine in the main building and many hand-grenades in the main, and other buildings. Eight fire-pails are also kept constantly filled with water in the central hall of the main building. Two long fire-escape ladders are kept in convenient places ready for emergency. In the medical dispensary also is kept a neat case containing extra fire-appliances including three fireman's pick-axes, three patent fire-extinguishers, twenty-four grenades and four Stempel fire-extinguishers.

Heating.—On the whole, the heating system is now satisfactory, although some slight additional improvements will probably still further reduce our fuel bill.

Recreation.—Football continues to be the greatest favourite among the boys, although baseball revived for a short time this season. Handball, ping pong and other games are enjoyed by the girls. The music furnished by our band since they got their new instruments brightens school life. Considerable hunting is also done by the older boys in season.

General Remarks.—Discipline and general good order has been greatly promoted by the appointment of pupil officers among boys and girls, who by virtue of the stripes

they wear, at all times and everywhere represent the staff in the absence of any member of the latter. The placing of boys and girls at the same tables in the dining-room and allowing them to mix freely on a limited part of the playground for an hour or so every evening has improved the conduct of both.

It is again my great pleasure to report very favourably on many of our graduates whom I have visited on the reserves. John Hunter won the admiration of his white comrades and officers on South African battle-fields, and we are glad to welcome him back unscathed, although he was in Harts River fight and several other hot engagements. In his absence John Kasto filled creditably and faithfully the position of assistant farm instructor in this institution. The latter goes this autumn to take a five years' course in Hampton Normal and Agricultural institute, Virginia, preparatory to taking a position as farming instructor in some of our schools.

On one of my late visits to a reserve, I was cheered beyond what I can express by the calm, hopeful peaceful way in which one of our graduates was awaiting the near approach of death. This case showed that although we sometimes may fancy that no impression has been made upon our pupils, because they do not act ordinarily as we expect them to, yet, when the real testing times of trial, sickness and death come, causing the soul to feel for its most solid anchorage, we find apparently long-forgotten truths promptly coming to their relief. I was greatly encouraged also to see how many graduates are stimulated in good work and conduct by the anticipation of regular visits from some representative of their alma mater.

I was also greatly impressed with the happy results produced in industry and manly conduct among such graduates as Willie Bird, Fred Deiter and Ben Assinawasis and some Qu'Appelle graduates on the File Hills reserve by the encouraging helping hand of Agent Graham and the sympathetic interest and truly maternal treatment of Miss Gillespie. If all our school graduates were promptly picked up, and the means of self-support put within their reach by agents like Mr. Graham on the one hand, and if all received the unstinted comprehending sympathy of missionaries like Miss Gillespie, we should have less complaints about their indolence and mischief. As Miss Cornelius truly said in her paper on Indian education on last graduation day, 'Any man will be indolent if he has no ideal.' It is because the agent and the missionary referred to, place an attainable ideal before the boys when they arrive fresh and enthusiastic from school, and continue to keep before them that they are men with a future, that those boys are so remarkably successful. I was also pleased to note the efforts along the same line made by Agent Aspdin on the Assiniboine reserve and favourable results produced in the well-doing of graduates Philip Ironstar, Willie Grant and Nellie Achaza and her husband, Joseph Jack, as well as in some graduates of the Qu'Appelle school on that reserve.

This assisting of graduates to do well for themselves is a distinct improvement on the policy of sending graduates home to be the drudges of indolent, non-progressive parents and relatives.

I am delighted to be able to report that, by the benevolence of friends in far away Scotland, a fund is now at our disposal for the higher education of a limited number of our graduates of ability and worth who wish to help their own race in the capacity of preaching missionaries, teaching missionaries, medical missionaries or industrial instructing missionaries. The fund will support on an average four students yearly in such schools or colleges as are fitted to develop their respective special talents. This makes it practically possible after this to offer one travelling scholarship of $250 tenable for four years as a prize for the most promising graduate of each year who has the required missionary devotion.

I cannot close my report without mentioning my high appreciation of the hard work done during the past year by my staff, and the unfailing courtesy, encouragement and generous assistance of Inspector McGibbon and the various agents and missionaries that I encountered on my various recruiting trips.

I have, &c.,

J. A. SINCLAIR,
Principal.

NORTHWEST TERRITORIES,
HIGH RIVER INDUSTRIAL SCHOOL,
DUNBOW, ALTA., July 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I beg to submit my annual report for the fiscal year ended June 30, 1902.

Location.—This school is situated on the west side of High river, nearly two miles from Davisburg post office, and about twenty-five miles southeast of the city of Calgary, Alberta. The school is not on an Indian reserve, but on land specially allotted for the use of the institution.

The land controlled by the school aggregates nine hundred and sixty acres. Half of this immediately surrounding the school and consisting of rich bottom and bench land is used for farming and gardening, and for pasture for stock, which are necessarily held from the range. The other half, about twelve miles to the southeast is used for hay-land, having many sloughs in which the prairie hay grows abundantly. This aggregate of nine hundred and sixty acres is comprised as follows:—fractions of sections 22, 26 and 27, township 21, range 28, west of the fourth meridian, and the east half of section 26 and the northeast quarter of section 36, township 20, range 27, west of the fourth meridian.

Buildings.—The two principal buildings of the institution are, one chiefly for the use of the boys, and one for the use of the girls. In the boys' building are the principal's room, reception-room, office, small store-room, two class-rooms, two dormitories, two recreation-rooms, the boys' infirmary, and rooms for some of the members of the staff. In the girls' building, which is under the immediate charge of the reverend Sisters, are the kitchen, dining room, chapel, girls' class-room, dormitory, recreation-room, sewing-room and generally the whole of the matron's department. The workshops are west of the boys' school, and are all in buildings separate from it. Behind the main buildings are the outhouses: stables, granary, piggery, implement and carriage sheds, and the slaughter-house. The hospital, laundry and engine house are east of the girls' building on the bank of High river. During the year an addition was made to the byre for the use of stall-fed steers.

Accommodation.—There is accommodation for one hundred and fifty pupils, and a staff of twelve members.

Attendance.—The attendance for the year averaged seventy-five.

Class-room Work.—In the class-rooms the official programme of studies is carefully adhered to. Examinations, both oral and written, are held at the end of each term, promotions made and prizes awarded in the different class-rooms. Fair progress is made by the pupils in all their studies. English is the only language spoken in the school, and, indeed, many of the younger pupils have almost forgotten their native tongue.

Farm and Garden.—Last year's harvest off about two hundred acres comprised four thousand eight hundred bushels of oats, one hundred and fifty bushels of wheat, two hundred and twenty-two bushels of barley, nine hundred bushels of potatoes, four thousand bushels of turnips, five hundred and fifty-eight pounds of brome, and one hundred and fifty tons of green feed. Two hundred tons of hay were put up.

Stock.—There are one hundred and eighty head of cattle in the school herd. Of these one hundred and twenty-five belong to the institution, the remaining number are owned by the boys, who bought them with their earnings during the harvest-time, while hired out with neighbouring farmers. Our herd supplied us with the beef required by the institution, and, moreover, we sold seventeen steers at an average of $67. Hog raising has been found a source of revenue, and particular atttention is given to this

industry. We sold over $200 worth of pork, besides supplying the requirements of the kitchen. We have now four breeding sows and about forty young pigs, and a quantity of bacon on hand. During the year we sold two horses, which averaged over $200. There are now in the herd thirty-nine horses, most of which are good serviceable animals of the general purpose class.

I may state here that the work of the farm, and the caring for the stock, have been done by the boys, supervised by the instructor.

Industries Taught.—Stock-raising and farming are the principal industries taught here, and by far the greater number of the working boys are employed in these.

Carpentry.—During the past year a regular carpenter instructor has been employed, and four boys are steadily occupied in the shop, and in executing the necessary repairs on the premises.

Shoemaking.—No regular tradesman is employed in this department. One of the older boys, who was regularly trained in the shoe-shop here, is employed in the shop, being occasionally assisted by some of the other boys.

Baking.—A baker is engaged to do the baking for the school. He also does the butchering, assisted by two boys as apprentices.

Needlework.—The girls are thoroughly trained as housekeepers, sewing, knitting, mending and general repairing being a part of their daily routine of duties.

Moral and Religious Training.—Instruction in Christian doctrine is imparted to the pupils, who are led to apply it in their daily duties. In general the morals and conduct of the pupils have been very satisfactory.

Health and Sanitation.—The general health of the pupils has been very satisfactory, although one boy has been confined to the infirmary for some time, and is still far from well. The sanitary condition of the school is good.

Water Supply.—A large well close to the river affords an abundant supply of good water, which is pumped into the tanks in the different buildings by means of a steam engine.

Fire Protection.—Three tanks, situated immediately under the roof with a capacity of fourteen hundred gallons each, are kept full of water, which can be used effectively on any flat. On each story there are one hundred feet of hose connected with pipes from the tanks. Fire-extinguishers and hand-grenades are placed in the different rooms, and fire-pails constantly filled with water are distributed in convenient places. We have on hand eight axes, fifteen fire-extinguishers, fifty-eight hand-grenades, and forty-two fire-pails. Each of the three dormitories is furnished with a large fire-escape.

Heating and Lighting.—The boys' building is heated by four hot-air furnaces. Ordinary stoves are used in the girls' building. The system of lighting is entirely by coal-oil lamps.

Recreation.—All sorts of outside games are heartily encouraged. The boys play football, cricket and baseball in summer. In winter, hockey is their principal game. The proximity of the river affords an unfailing field for this latter game. The girls amuse themselves during play-time at croquet, basketball and other healthy exercises. The different divisions have a half holiday on different days during the week, engaging in suitable games, and otherwise thoroughly enjoying themselves.

I have, &c.,

M. LÉPINE, O.M.I.,
Principal.

NORTHWEST TERRITORIES,
BATTLEFORD INSPECTORATE,
MIDDLECHURCH, MAN., October 16, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit my annual report on the inspection of schools for the year ended June 30 last.

EMMANUEL COLLEGE, PRINCE ALBERT.

This institution was inspected twice during the year, namely, in September and again in April.

Staff.—On the former occasion the staff was constituted as follows: Rev. James Taylor, principal; Mrs. Taylor, matron; Miss B. McDonald, assistant matron; Miss N. Fitzpatrick, cook; Miss V. Hounsell, teacher. The charge of all the classes was felt to be an unduly heavy task for one teacher, and accordingly, two months later a male teacher was employed to act as general assistant to the principal, and take charge of the senior classes, Miss Hounsell taking the primary division.

Classification.—The pupils enrolled in April were classified as follows:—

	Boys.	Girls.	Total.
Standard I	6	7	13
" II	5	4	9
" III	9	3	12
" IV	4	6	10
" V	4		4
" VI	3	1	4
Total	31	21	52

No difficulty is found in keeping the attendance up to the authorized number, and as that number is maintained, no effort at recruiting has been made for some time.

Class Work.—Though the teachers had in both instances but little experience and no professional training, yet the methods employed showed care and thought, and these combined with diligence and good discipline are producing satisfactory results.

The senior class-room is large, well lighted, and comfortable; the junior one is small, and inconvenient, well lighted but poorly ventilated. The desks and black-boards in both rooms required repairs or to be replaced by new ones.

Training of Teachers.—One of the objects in the establishment of this institution as an Indian school was the training of teachers for work on the reserves. In this some success has been attained, and the three boys now in the sixth standard are approaching the qualifications necessary for such work, and are, moreover, boys of the right stamp.

Industrial Training.—The agricultural industries are prosecuted to an extent and with a success equal to that of an industrial school, though nominally it does not belong to this class.

Duck Lake Boarding School.

This school was inspected in October.

The staff remains almost the same as at last inspection. It is very complete, including among the male officers a farmer, a gardener, a carpenter, an engineer, a baker and a general assistant.

Attendance.—There were one hundred and four pupils in attendance, who were classified thus:—

	Boys.	Girls.	Total.
Standard I	20	32	52
" II	15	6	21
" III	7	5	12
" IV	10	9	19
Total	52	52	104

Class Work.—The class-rooms are equipped with all necessary furniture, material and appliances. All the regular subjects of the programme are carefully taught and with good results, especially in the boys' division, which continues in charge of a well trained and experienced teacher.

The various rooms of the main building were scrupulously clean and well ventilated. A complete supply of fresh white coverlets had been added to the equipment of bed clothing.

Buildings.—An additional hot-air furnace has been placed beneath the main building. A small annex has been erected as a station for the acetylene gas generator, which precaution, together with the utmost care in the management of the plant, seems to remove the least possibility of danger from explosion.

Industries.—A large crop of roots and vegetables was gathered. The work of cultivation was done by the pupils under the direction of a gardener. The potatoes, carrots and cabbages were of unusual size and quality. A large and beautiful flower garden adorned the foreground of the premises.

In order to improve the facilities for training in the cultivation of cereals, a portion of land adjacent to the school and belonging to the principal has been broken up. It is the intention to cultivate a quarter section here for grain. Hitherto the grain-fields for the school, being located at a distance, were worked by hired labour.

A large number of horses, cattle, sheep, and poultry are kept on hand. An inclosure of about one hundred acres affords pasturage for the greater part of the stock.

To promote the success of dairying in connection with the school, four head of thorough-bred Jersey cattle have been purchased, besides some grade cows of a good milking strain.

Roman Catholic Boarding School, Onion Lake.

This school was inspected on December 9 and 10.

The Rev. C. Boulene has succeeded the Rev. W. Comire as principal, but otherwise the staff remains unchanged.

There were sixty pupils enrolled, of whom forty-seven were admitted as grant-earning pupils. They were classified as follows :—

	Treaty.		Non-Treaty.		Total.
	Boys.	Girls.	Boys.	Girls.	
Standard I	9	6	5	4	24
" II	4	6	.....	1	11
" III	5	4	1	1	11
" IV	3	3	.....	.....	6
" V	2	2	.....	1	5
" VI	2	1	.....	.....	3
Total	25	22	6	7	60

With the exception of nine Chipewyans from Beaver river and one Cree child whose parents are wanderers, all the treaty pupils are from Seekaskootch reserve, though belonging to five different bands.

For class work the school is divided into two forms of convenient and about equa numbers. In both forms the work is properly conducted and the progress of the pupils is satisfactory. In order to simplify the more difficult portions of the text-books and to put the most useful lessons in such a form as to be readily grasped and permanently retained, and also to cover some valuable fields of elementary knowledge outside the limits of the prescribed text-books, Sister Saint Patrick, teacher of the senior division, has prepared several series of questions and answers, concisely expressed and logically arranged, embracing a considerable course of nature study, history, geography and general knowledge. The pupils were instructed in the nature and aims of laws and government, and as useful illustrations were able to repeat at length the provisions of the Prairie Fire and Game Ordinances of the Northwest Territories.

All the pupils had measles during November, but all had recovered at the date of inspection, and the health of the school was in general very good.

Protestant Boarding School, Onion Lake.

The inspection of this school was postponed from December to the latter part of January on account of the prevalence of measles in the school at the former date.

Staff.—The staff was constituted as follows: Rev. J. R. Matheson, principal; Mrs. Matheson, M.D., matron; Miss A. R. Phillips, assistant matron; Miss A. Cunningham, seamstress; Miss Annie Graff, laundress; Baptiste Poyak, carpenter. The two last named are ex-pupils of the Battleford industrial school.

Attendance.—There were sixty-five pupils enrolled: fifty-four boarders and eleven day pupils. They were classified as follows :—

	Treaty.	Non-treaty.	Total.
Standard I	3	22	25
" II	5	5	10
" III	2	12	14
" IV	3	6	9
" V	3	4	7
Total	16	49	65

Class Work.—The work of the school-room has been seriously interrupted during the past year through changing of teachers, and yet more through children's diseases which prevailed in the school and in the reserve at times. Miss Warren, who had just

assumed her duties, is a very competent teacher, and the work, though somewhat disorganized, cannot fail to improve rapidly under her direction. The principal has been endeavouring to procure another properly qualified teacher, precisely what is required for the complete efficiency of the work ; but such teachers are not readily to be had at points so remote, and he may fall short of his aim.

A few of the senior pupils attend school only half time, devoting the other half to trades or to household duties as in the industrial schools.

The staff is small for the work involved in the care of so many children, but they are very much devoted to their duties, and nothing is neglected that care can accomplish for the comfort and permanent good of the pupils.

Buildings.—The main building has been enlarged, affording now a convenient dining-room of suitable size, as well as much improved dormitory accommodation for the girls. Preparations are being made for further improvements.

Saddle Lake Boarding School.

This school was inspected in January.

The Rev. H. Grandin is principal and is assisted by the following staff of reverend Sisters : Sister Leveille, matron : Sister Laverty, teacher ; Sister Legoff, seamstress ; Sister St. Augustine, seamstress ; Sister Colombe, laundress ; Sister Celina and Sister Eugenie, cooks.

Attendance.—The enrolment consisted of forty-seven pupils : thirty-one boys and sixteen girls, classified in their school work as follows :—

	Boys.	Girls.	Total.
Standard I	13	6	19
" II	3	4	7
" III	8	1	9
" IV	4	4	8
" V	3	1	4

Class Work.—The school is divided into two forms, senior and junior. The examination of classes in the senior form gave stisfactory results and showed that the classes are under regular and efficient instruction. There has been a change of teachers, but no interruption occurred in the work. The primary form was in charge of a substitute teacher. The order of the room was good and some work was being accomplished.

The conduct of the pupils, both in and out of school, was admirable. On the evening of the examination a programme of songs, drills, and dialogues was rendered by the pupils in such a manner as to indicate not only careful preparation but also considerable capacity for physical and intellectual improvement, and an appreciation of the humorous, which is not a general characteristic of the Indian.

Buildings.—The building is still new and is consequently in a good state of repair. It is comfortably heated with stoves. All appartments were very clean and suitably furnished.

Battleford Industrial School.

The inspection of this institution was made in February.

Staff.—The staff at that time was constituted as follows :—

Rev. E. Matheson, principal ; M. B. Edwards, clerk ; Mrs. M. A. Ward, matron ; J. E. Allen, head teacher ; Miss C. Ridgeway, primary teacher ; Miss E. Shepphird, nurse ; Miss N. Hayes, seamstress ; Miss E. Schofield, laundress ; Miss H. Chisholm, cook ; Mrs. J. H. Scott, baker ; J. H. Scott, farmer ; E. Brown, carpenter ; A. Suffern, night-watchman.

Changes of officers during the past year have been few and unavoidable.

Attendance.—The ninety grant-earning pupils enrolled are drawn from the following bands :—

Red Pheasant's, twenty-one ; Moosomin's, eighteen ; Sweet Grass', nine ; Thunderchild's and Poundmaker's, each, seven ; Seekaskootch', three ; Little Pine's, Mistawasis', and John Smith's, each, two ; Mosquito's, Ahtahkakoop's, Kenemotayoo's and Sturgeon Lake, each, one ; non-treaty, fifteen.

Under present conditions the constituency of the school is limited to the reserves of the Battleford agency, though formerly a large part of the attendance was derived from the neighbourhood of Prince Albert.

Class Work.—During the six months ended December 31, there was no regular teacher for the senior division, and the class work suffered seriously in consequence. Since that time, however, the work has been resumed with regularity, both forms are under competent instruction, and the prospects are good for better work.

In the school-room the pupils, including a number who are not regularly enrolled, are classified as follows :—

	Boys.	Girls.	Total.
Standard I	5	14	19
" II	18	13	31
" III	18	24	42
" IV	15	1	16
" V	5	5	10
Total	61	57	118

Industries.—Five boys are learning carpentry and twenty-one are farmer boys. A few of the largest of the farmers assist their instructor occasionally in the blacksmith shop at ironing sleighs, making repairs to implements, and other plain work. Under the direction of their instructor they also make repairs and additions to farm buildings where necessary. To this extent, at least, the policy is adhered to of giving all boys a training in the use of the commoner class of mechanic's tools.

Buildings.—The greater part of the main building has been re-shingled, and several dormer windows have been inserted, greatly improving the lighting and ventilation of the dormitories in the third story.

Water Supply.—A spring of excellent water a quarter of a mile distant has been connected with the school by pipes, and in this way it seems probable that a sufficient and permanent supply has been obtained.

Thunderchild's Boarding School.

This school was opened in April, 1901. It is located on the western border of Thunderchild's reserve, and is conducted under the auspices of the Roman Catholic Church by the Rev. H. Delmas, assisted by the reverend Sisters of the Assumption.

The school was visited on February 4.

There were thirteen pupils in attendance : seven boys and six girls.

The children are all in standards I and II, and their attainments are necessarily very slight. Good discipline prevailed, however, an excellent spirit of work, and favourable conditions generally, so that progress may be looked for.

As the pupils are mostly quite young, little is taught them of an industrial nature. Even in housework only the lightest duties are performed by pupils, but whatever they are required to do is done under careful supervision.

Buildings.—The buildings consist of the main building and a small detached structure used as laundry. These were completed in July, 1901, at a cost of $2,500. The main building contains the class-room, dormitories, dining-room, kitchen, and the staff's apartments, and affords accommodation for about twenty pupils and a staff of four or five persons.

The site of the school is well chosen from several points of view. Among others there is an abundant supply of the best water, and there are rare advantages for farming

and gardening, as the soil is of the most fertile quality and easy of cultivation. Adjoining the school is a quarter section of such land belonging to the mission.

Day Schools.

There are in this inspectorate eighteen day schools, all, of course, located on reserves, namely, five in the Battleford agency, three in the Saddle Lake agency, eight in the Carlton agency, and two in the Duck Lake agency.

Two of these were not visited during the year, and three others were visited briefly but not examined.

There is but slight change in the condition of these schools. What has been said in former reports applies with almost equal force at the present time. The main difficulties with which this class of school has to contend are the indifferent qualifications of the teachers available, and the neglect of parents to send their children to school regularly or to send them at all; while they are further handicapped by the fact that on most of the reserves almost all the children that approach a sound condition of health are taken to recruit the attendance at the boarding schools.

As regards the work these schools are accomplishing, from one point of view it appears slight, inasmuch as the majority of their pupils do not reach even the third standard during their school life. But it must be borne in mind that, while they do not attain to anything considerable in book knowledge, yet they carry with them daily to their homes, and there exemplify more or less fully, to the advantage even of their parents, the benefits they have received from the instruction and associations of the school.

It cannot be doubted, moreover, that as compared with boarding schools the day schools have this advantage for the Indian, namely, that the care expended by parents from day to day upon the food, clothing, education, and general well-being of their children has a favourable moral reaction upon themselves, while to be relieved of that responsibility has a distinctly opposite effect.

I have found the day schools with few exceptions suitably furnished with desks, stoves, pails, washbasins, towels, brooms, and so forth, and properly equipped with maps, black-boards, slates, books, and other stationery; all of which the government supplies; but in a few instances there has been a neglect in connection with fences, repairs, and the supply of fuel, which are provided by the bands.

Three new day school buildings have been completed, all in the Carlton agency. One of them, situated on Ahtahkakoop's reserve, is a particularly comfortable and suitable building.

On May 1, I took charge of the Rupert's Land industrial school pending the appointment of a principal. Observations on this school are contained in a separate report.

I have, &c.,

W. J. CHISHOLM,
Inspector of Indian Agencies.

MANITOBA SUPERINTENDENCY,
RAT PORTAGE INSPECTORATE,
RAT PORTAGE, Ont., October 13, 1902

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report of my inspection of schools in the Rat Portage, Savanne, and Couchiching agencies for the fiscal year ended June 30, 1902.

RAT PORTAGE AGENCY.

RAT PORTAGE BOARDING SCHOOL.

This school was inspected on February 14, and June 24, and visited on several occasions during the year. This institution is in connection with the Roman Catholic Church.

Staff.—Rev. Charles Cahill, O.M.I., principal; Rev. Bro. Pilon, monitor and gardener; Rev. Sister Marie Christin, superior and matron; Sr. Lucie, assistant matron and seamstress; Sr. McGuirck, teacher, and Sr. Guay, cook.

Grading of Pupils.—The number of pupils present was thirty; boys, twelve, girls, eighteen; number on roll, thirty. The classification was twenty-one in standard I, five in standard II, and four in standard III.

Buildings.—The main buildings, which are occupied by the staff and pupils, are the same as reported last year, and there were no changes made; the dormitories, kitchen, dining-room and cellar were clean and everything is in good order; the rooms are well ventilated. The boys' and girls' recreation-rooms and also the work-room were clean and comfortable.

Outbuildings.—These buildings are all in good order; the one built last year for use as a storehouse and laundry has been covered with corrugated iron sheet, this and the shingle roof painted deep-brown.

Class Work.—The class work was being ably conducted by Sister McGuirck, and the pupils were getting on very well and the result of the examination satisfactory and great improvement indicated.

The girls are taught dairy work and baking, sewing, cutting out, making and mending clothes for themselves, cooking, washing and general housework. Some very good knitting and other work done was noticed.

There was a fair supply of vegetables produced from the garden under the charge of Rev. Bro. Pilon, who is a practical gardener; upwards of sixty young apple-trees have been planted as an experiment this last spring, which from their appearance promise for the future. The boys help in the garden, take care of the cows and poultry, cut wood, &c.

Conduct and Discipline.—The conduct of the pupils is very satisfactory, and as there is a regular system of discipline, there is no trouble in maintaining order. An improvement was noticed in the better speaking of the older girls. The speaking of Ojibbewa had almost ceased and I heard none of it during my several visits.

The expenditure during the year was $2,721.31; receipts, $2,402.57; deficit, $318.74.

Islington Day School.

This school was inspected on May 28, 1902. It is in connection with the Church of England. Mr. I. S. Newton is teacher and catechist.

Attendance and Grading.—The number of pupils present was twelve; boys eight, girls four. Number on roll, fifteen classified as follows: ten in standard I and five in standard II.

Building.—The school-house is a new one, and was built by Councillor Adam Land. It is of log 19.6 x 20.6 feet on stone foundation, clapboarded outside and lined throughout with tongued and groved lumber, shingled with first-class pine shingles. This school is well lighted, neat and clean. School material sufficient.

Mr. Newton takes considerable pains in teaching, and the children are progressing a little in learning good manners and civilized habits, they were clean and well dressed.

SAVANNE AGENCY.

Eagle Lake Day School.

This school was inspected on July 17, 1902. It is under the auspices of the Church of England. Mr. Arthur J. Bruce is teacher and catechist.

Attendance and Grading.—Number of pupils present, sixteen: boys eleven, and girls five. Number on roll, seventeen, classified as follows: nine in standard I, four in standard II and four in standard III; all material necessary was on hand.

Building.—The school-room as well as the outside of the building has been newly whitewashed, and the place was tidy and comfortable.

The attendance of the children has been more regular during the year, and consequently the children have made fair progress. The teacher is painstaking and the children are progressing a little in learning good manners and civilized habits. They were decently clothed and clean.

Wabigoon Day School.

This school was inspected on July 19, 1902.

Attendance.—The number of pupils present, twenty-eight: boys twelve, girls sixteen; number of pupils on roll, thirty-one, classified as follows: twenty-two in standard I, five in standard II and four in standard III.

Material on hand ample. Mrs. Amy Johns is teacher.

The school-room was clean and comfortable, and the building in good repair.

The examination was satisfactory and Mrs. Johns was doing her best to instil knowledge to each respective class; the pupils were clean and well dressed, especially the girls.

Frenchman's Head Day School.

This school was inspected on July 26, 1902. It is under the auspices of the Church of England. Mr. R. F. Macdougall is teacher and catechist.

The number of pupils present was forty: boys, eighteen; girls twenty-two; number on roll, forty, classified as follows: twenty-nine in standard I, six in standard II and five in standard III.

School material sufficient.

The building is in good repair and the class-room clean and tidy, pupils also clean and fairly dressed. A manifest change was noticed in the comportment of the children attending school, Mr. Macdougall, who is a teacher of long experience and a disciplinarian of high standing, has put his several classes in good form, and his work was commended.

Lac Seul (Canoe River) Day School.

This school is on the Lac Seul reserve, it was inspected on July 30, 1902. The number of pupils present, eighteen: boys, eight, girls ten; number on roll, twenty: eleven in standard I, five in standard II and four in standard III. School material and equipment are sufficient. Mr. Louis de LaRonde is teacher. The school-room was clean and tidy. The building is in good repair. There is a small garden attached to the school and Mr. de LaRonde was doing his best to interest his pupils in this garden. The work of the school is efficiently performed by the teacher, and by dint of energy the pupils show a fair knowledge of their studies; but it is regrettable to say that the repeated absence of the whole family in the spring and in the fall for the purpose of hunting &c., is detrimental to the advancement of their children in their class work. This school is under the auspices of the Church of England.

Lac Seul (Treaty Point) Day School.

This school is on Lac Seul reserve and was inspected on July, 30, 1902. Teacher Rev. Mr. Sanderson. The teacher, Rev. Thos. Pritchard, left at the beginning of April on leave. Present at inspection, fifty-seven: thirty-two boys, and twenty-five girls; all are in standard I; such an attendance occurs only at treaty-time and continues for about four or fire weeks.

This school is under the auspices of the Church of England.

Wabuskang Day School.

This school was inspected on August 1, 1902. The number of pupils present, fourteen; boys, five, girls nine; number of pupils on roll, seventeen; all in standard I. Material on hand ample.

Mr. James Fox is teacher and catechist.

The school-room was fairly clean, but not too comfortable.

This school was re-opened in the month of January by the present teacher. The attendance of the children has been very irregular during that time, and consequently little, if any, progress can be reported; only one pupil reads and spells fairly well in the first primer.

This school is under the auspices of the Church of England.

COUCHICHING AGENCY.

Manitou Day School.

This school was inspected August 22, number of pupils, seven: boys four, girls three; number on roll, nineteen, classified as follows: fifteen in standard I, four in standard II.

All material necessary was on hand.

Mr. R. H. Bogshaw, teacher.

The school is under the auspices of the Church of England.

The school-room was clean and comfortable and the building in good repair, and the pupils clean and well dressed. Those present were put through their respective classes, and show intelligence and care in teaching since my last visit.

Little Forks Day School.

This school was inspected on August 26, it is under the auspices of the Church of England. Mr. D. W. Wood is teacher. Number of pupils present, one boy and one

girl. Number on roll, ten: boys six, girls four; seven in standard I, two in standard II, and one in standard III.

Equipment and material sufficient.

The building was in good repair and the class-room clean and tidy.

Couchiching Day School.

This school was inspected on August 27. It is in connection with the Roman Catholic Church. Alfred Bruyère, a former pupil of St. Boniface industrial school, is teacher.

The number of pupils present was sixteen; boys eleven, girls five; number on roll twenty-seven.

School material sufficient.

The teacher had only been at work a short time, and with more experience will, I have no doubt, accomplish good results.

The school-house has been thoroughly repaired and placed in good and comfortable condition. It was clean and in good order.

GENERAL REMARKS.

The Assabaska day school in Rat Portage agency, as well as Long Sault and Stangecoming in the Couchiching agency were not visited during my tour, on account of the same having been temporarily closed for want of teachers.

I have, &c.,

L. J. ARTHUR LEVÊQUE,
Inspector of Indian Agencies.

Northwest Territories,
Qu'Appelle Inspectorate,
Qu'Appelle, October 6, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit the following report of my inspection of industrial, boarding and day schools, in Manitoba and the Northwest Territories, from October, 1901, to September 30, 1902.

Rupert's Land Industrial School.

This school was inspected on October 14 and 15, 1901. The number of pupils present was one hundred and thirty-nine: seventy-nine boys and sixty girls: number on roll, one hundred and forty-five; absent on leave, five; in hospital one.

Classified as follows:—

	Boys.	Girls.	Total.
Standard I	16	16	32
" II	20	10	30
" III	17	14	31
" IV	16	7	23
" V	14	15	29
			145

S. T. Newton is teacher of the senior department and Miss Cree of the junior department.

Miss Cree was absent at the time through illness, and her place was being filled by Miss Gordon, a teacher from Winnipeg.

Both departments were ably conducted and the pupils showed that they had been carefully trained

Some improvements were recommended in the heating of the class-rooms and more black-board space; otherwise the equipment and school material seemed to be sufficient.

The pupils come from the following places :—

	Boys.	Girls.	Total
Lac Seul	10	2	12
Cumberland House	4	1	5
St. Peter's reserve	25	39	64
Rainy River	5	2	7
White Dog	5	.	5
Fisher River	10	5	15
Grand Rapids	3	3	6
Norway House	5	..	5
Brokenhead	5	..	5
The Pas	7	7	14
Fort Alexander	4	3	7
	83	62	145

The pupils were clean, tidy and comfortably dressed; discipline and order were good, and so far as I could see during my stay at the school, I found the general behaviour excellent.

At the exhibition held in the parish, this school carried off first prize for writing, in competition with the public schools, and in the collection was a sample of the writing of a little girl ten years of age, Nellie Leask, who took first prize in the 'Globe' competition for best writing and composition for children under ten. The letter was published in the illustrated 'Globe' of Toronto, in October, 1901.

The following was the staff of the institution :—

J. G. Dagg, principal; Miss Lang, matron; Miss Cree, teacher junior department; Miss Galbraith, assistant matron; Miss Ross, seamstress; A. J. Kayll, clerk; J. B. Line, farmer; W. F. Burnham, general assistant; Fred Ross, blacksmith; Richard Smart, tailor; Joseph Balderstone, gardener; Sophia Einarson, laundress; S. T. Newton, head teacher; John Nordland, carpenter; Frances White, Cook; Albert Prince, watchman, and Nellie Flett, and Willie Ross, pupils, assistants.

A good many improvements had been made during the year. A new house for the principal, 29 x 31 feet, frame, on a stone foundation, one and a half story, with electric lighting, had been added; the recreation-room enlarged and improved; a new laundry, 26 x 22 feet, a flag staff and a band stand, bath-rooms improved by adding shower baths, with hot and cold water.

The whole house was in good order, clean and tidy, and the dormitories were models of neatness and cleanliness.

The grounds around the buildings, garden, &c., were in fair order.

The crop put in on the farm was one hundred and twenty-eight acres, and the yield was two thousand one hundred bushels of oats, two hundred and eighty-three bushels of barley and seven hundred bushels of potatoes; forty-two acres were reported of new land broken.

The live stock consisted of six horses, twenty-six head of cattle, fifty-five pigs and twenty-four poultry.

The books were audited, and found correctly kept, and the usual inventory was taken, and full statements of all transactions made, all of which were forwarded with detailed report to the Commissioner.

The school is entirely under the management of the department, but the religious services are according to the forms of the Church of England.

Elkhorn Industrial School.

This school was inspected on November 22, and other days.

The number of pupils present was seventy-five : forty-eight boys and twenty-seven girls ; number on roll, eighty-seven ; three boys out working, eight absent on leave through sickness, and there had been one death.

Classification of pupils—

Standard	I	32 pupils
"	II	16 "
"	III	20 "
"	IV	9 "
"	V	10 "

Miss Marks, teacher.

Equipment and school material well provided, only a few more books being asked for.

Miss Marks is an excellent teacher and the progress of the pupils was most satisfactory.

The pupils come from the following places :—

	Boys.	Girls.	Total.
St. Peter's reserve	30	14	44
Touchwood	1	.	1
Brokenhead	5	8	13
Oak River	8	3	11
Crooked Lake	3	3	6
Fort Alexander	1	.	1
Rat Portage	2	..	2
Moose Lake	1	..	1
The Pas	1	3	4
Pipestone	..	2	2
Moravian	..	1	1
Yorkton	..	1	1
Total	52	35	87

The staff of the institution was as follows :—

A. E. Wilson, principal ; Mrs. Wilson, assistant principal ; Jos. Webster, supervisor ; Mrs. Webster, matron ; Miss Marks, teacher ; Miss Dickens, seamstress ; John Cook, (graduate) carpenter ; Mrs. Cook, (graduate) cook ; Mrs. Bear, (graduate) laundress ; W. R. Bear, (graduate) shoemaker ; S. Pratt, (graduate) captain, and A. Anthony, (graduate) assistant cook.

A new root-house had been put up since last inspection, 60 x 14 feet. It has a seven-foot stone wall, and a ten-foot ceiling, and is a substantial building, and above the average of such buildings in finish and convenience. The entrance is from the cow-stable.

A granary, 28 x 32 feet, frame, contains six large compartments and these were filled with wheat and oats of the finest quality.

The principal's new house was almost completed.

The farm crop consisted of nine hundred and eighty-seven bushels of wheat, six hundred and thirty bushels of oats, four hundred and fifty bushels of potatoes, two hundred bushels of mangolds, four hundred and fifty bushels of turnips, and fifteen bushels of beets, and other vegetables used freely during the season.

The live stock consisted of six horses, five cows and four pigs.

The main building was in excellent condition, not a scratch could be seen on the woodwork, a proof of the good behaviour of the pupils of this school.

The trade-shops were also in a business-like form.

The sewing-room is a feature in a large school, and Miss Dickens performs her duty in this department in a most satisfactory manner, as can be seen by the tidy, well fitting dresses of the girls. Miss Dickens is a valuable member of the staff.

The usual audit of the books was made, and inventory taken, statements being forwarded to the Commissioner. Mr. Wilson keeps his own books and they are models of neatness and accuracy.

Mr. and Mrs. Wilson are much interested in the work, and every attention is given to the benefit of the pupils, and there was a quiet family tone about the whole place, which was pleasing.

The farmer, Mr. Smith, had his part of the work in good order; stables clean and comfortable, and all implements carefully stored, and I consider him a most capable farmer for the position, as tidiness, neatness and care of property are impressed on the boys by example, which is more effective than any amount of talking.

This institution is also under direct control of the department, and services are according to the form of the Church of England.

Cowessess' Boarding School.

This school is in the Crooked Lake agency, and was inspected on December 4, 1901. Number of pupils present, thirty—boys fifteen, girls fifteen. Number on roll, thirty, classified as under :—

Standard I	16 pupils
" II	5 "
" III	3 "
Ungraded	6 "

Staff.—Father Perreault, principal; Brother Eugene, carpenter; Brother Riouse, farmer; Sister du St. Nom de Marie, matron; Sister St. Augustine, teacher, and Sisters Bon Secours, Ste. Marthe, Ste. Germaine and St. Charles, assistants.

The sisters had not been long in this school, but in the short time, the little boys and girls showed good progress, and they were clever and quick in answering questions, and prospects were bright for this being a flourishing school.

It is needless to say that the house from top to bottom was a model of cleanliness and tidiness, the pupils were clean and well dressed, and all seemed to be in the best of health.

The crop consisted of only about one hundred bushels of potatoes, but land was prepared for a larger crop the following year in grain and roots.

The live stock consisted of eight horses and twenty-eight head of cattle, and also poultry.

The school is under the auspices of the Roman Catholic Church.

The building, as I have already reported, is equipped with all modern conveniences, including lighting by acetylene gas.

Round Lake Boarding School.

This school, which is situated in the Crooked Lake agency, was inspected on December 5, 1901. Number of pupils present, twenty-six—boys fifteen, girls eleven; number on roll, thirty-three, graded as follows :—

Standard I	17 pupils
" II	7 "
" III	3 "
" IV	2 "
" V	4 "

Miss Sahlmark, the temporary teacher, is most capable, and the work done was above the average in thoroughness.

The staff is composed of :—

Rev. Hugh McKay, principal ; Mrs. McKay, matron ; Miss Sahlmark, teacher, and an assistant matron and a cook.

The farm produced a good crop, consisting of eighteen hundred bushels of wheat, four hundred and fifty bushels of oats, three hundred bushels of potatoes, sixty bushels of beets, carrots and onions, also one thousand head of cabbages, one hundred bunches of celery, ten bushels of tomatoes, and rhubarb, cauliflower, watermelons, pease, corn, beans, lettuce and radishes.

The school owns one hundred and ten head of cattle, twelve horses, sixteen pigs, and eighty poultry.

One hundred tons of hay had been stacked, and two hundred tons of straw, for winter feed.

There was a good supply of clothing on hand for winter use, the gift of the Womens' Foreign Missionary Society of the Presbyterian Church.

The clothing is for the very old and helpless, as well as for the children, and these old people are profuse in their thanks for the help given them, and the comfort they experience from what they would otherwise have to endure during the cold winters.

Some pretty fancy work was to be seen in sewing and knitting, by the girls of this school.

Isabella Gaddie and Tina Kettick had each cut and made a dress for themselves, and Mary Ellen Gaddie a pair of mitts : Lulu McKay was proficient in knitting, mending and darning ; Grace Kaquaquase mitts and socks, Maggie Fisher, stockings.

The house proper was in good order, and the various rooms down to the basement were clean and everything seemed to be in its proper place.

The school-room, which is in a separate building, was warm and comfortable.

The school is under the auspices of the Presbyterian Church and is the second oldest of its kind in the Territories.

Regina Industrial School

was inspected on January 20 and 21, 1902. Number of pupils present, one hundred : boys, sixty-three, girls, thirty seven ; absent fifteen ; number on roll, one hundred and fifteen, classified as under :—

Standard	I.	36 pupils
"	II.	10 "
"	III.	29 "
"	IV.	15 "
"	V.	10 "

J. N. Bayne, is teacher of the senior room, and Miss Cornelius, a graduate of the Hampton industrial institute, U. S., is teacher in the junior room.

The class work in both rooms was of a high standard and the pupils seemed much interested in their lessons, which is a good sign of progress being made. The pupils come from the following places :—

	Boys.	Girls.	Total.
Assiniboine agency	12	3	15
Muscowpetung's	9	4	13
Pelly	3	7	10
Duck Lake	3	2	5
Birtle	18	16	34
Edmonton	1	..	1
Carlton	12	9	21
Big River, Carlton	3	..	3
File Hills	2	..	2
Moosejaw	2	2	4
Portage la Prairie	4	1	5
Crooked Lake	1	1	2
Total	70	45	115

Twenty pupils graduated in April, 1901.

A retired sergeant of the Northwest Mounted Police, living near the school, very kindly gives the boys and girls a drill exercise once a week, and is improving them in many ways.

The health of the pupils at the time was good, a few were troubled with sore eyes.

The staff of the school besides the two teachers already mentioned is as follows :—

Rev. J. A. Sinclair, principal ; S. Mars, assistant principal and book-keeper ; W. F. Cowle, farmer ; Miss Baird, seamstress ; Mrs. Mars, cook ; Miss Cameron, matron ; Herman, (graduate), carpenter ; May Bell Cote, (graduate), laundress ; John Hunter, (graduate), assistant farmer and fireman, and Solomon Friday, (graduate), printer.

The farm gave a good return for the past year (1901) consisting of one thousand seven hundred and thirty-five bushels of wheat, nine hundred and seventy bushels of oats, one thousand two hundred bushels of potatoes, one hundred and seventy-five bushels of turnips, one hundred bushels of onions, also beets and carrots, and a good supply of vegetables for the use of the house during the season, and a quantity were sold.

The garden was a good one, and a number of prizes were taken at the Regina fair.

A second root-house, 16 x 12 feet, had been built during the year, and a small blacksmith-shop fitted up A number of repairs were made in the main building, in the shape of piping, furnaces, ventilation, &c., by which a saving in fuel was effected.

Mr. W. A. Wilson, creamery inspector for Regina district, kindly gave a number of lectures free to the pupils during the past summer, on the subject of butter-making —the proper care of milk and the necessity of the utmost cleanliness being observed in all operations from the cow to the packing for market or for home use.

Fifty acres of summer-fallow and sixty of fall-ploughing had been done.

The trees and shrubbery around the main building are doing well, and add much to the appearance of the place.

The main building and all outbuildings were carefully gone over, a few repairs were pointed out, but on the whole, the buildings were in good order.

The live stock consisted of fourteen horses, mares and colts, eleven cattle, twenty-one pigs and forty-six poultry.

The books were audited, inventory taken, and statements sent to the Commissioner.

Mr. Mars was doing the office work very efficiently and was also careful in looking after the stores and keeping a check on the issues.

The Women's Foreign Missionary Society of the Presbyterian Church continues to send a liberal supply of clothing and other useful articles for the use of the school.

The school, notwithstanding the many changes in the staff during the year, and the reduced number of pupils, and the difficulty in getting new recruits, was still holding its own, and the principal, Mr. Sinclair, was sparing no pains to make it as successful as it has been in the past, and I was pleased to see that as far as class work was concerned, it was quite equal in efficiency to any other inspection I have made, and I have inspected this school from the first, as I assisted the late lamented Rev. Mr. McLeod

in organizing the various departments of the work. This school is on the per capita system, and is under the auspices of the Presbyterian Church.

File Hills Boarding School

was inspected on March 24, 1902. Number of pupils present, fifteen; boys eight, girls seven; number on roll, fifteen, classified as follows:—

Standard I	8 pupils
" IV	7 "

School material, ample.

The staff at this school consists of Miss Kate Gillespie, principal and teacher; Miss J. R. Gillespie, matron; and graduate, inside helper.

I was much pleased with my visit to this school. I had knowledge of Miss Gillespie's excellent work at Crowstand school, and I had heard of her success at Mistawasis school, and was, therefore, prepared to find equally good results at File Hills, and in this I was not disappointed. The class work showed decided progress on the part of the pupils.

An entertainment was given by the pupils on March, 27; these are held weekly, and are managed by a committee of pupils themselves. The entertainment consisted of speeches, recitations, choruses, tableaux, solos, &c., and the whole performance reflected credit on the pupils and on Miss Gillespie in training these little boys and girls, and in interesting them in passing the long winter evenings in a beneficial way.

Dr. Carthew, of Qu'Appelle station, was present, and he expressed himself as much pleased with the intelligence shown by the children.

Miss Gillespie and her sister are doing excellent work in this school. There is a Christian Endeavour Society and meetings are held weekly.

There is a Sunday school every Sunday at 2.30 p.m., and a song service every Sunday evening, and many of the Indians attend this service, and join in the singing of hymns in their own language.

Rev. Mr. Farrar, the former principal, left the place in good order, and a large supply of vegetables, enough for winter use. Mr. Farrar also built a new root-house before leaving, and it had kept the roots very well. This unselfish act of Mr. Farrar deserves mention.

The whole place was in excellent order. The meals are good, and it was pleasing to notice how nicely these little boys and girls took their meals, no scrambling, and no lifting their food into their mouths with a knife.

The dinner consisted of soup, beef and turnips, and the best of bread, rice pudding, no tea in the middle of the day, except for the boys working.

The evening meal consisted of tea, bread, apples or prunes, cake, butter or syrup.

The children are well fed, and they are healthy and strong.

Miss Gillespie is not only a successful teacher, but is proving herself to be an excellent manager, and she keeps her books and accounts in a condition that would shame some of our agency and school clerks.

Qu'Appelle Industrial School.

The school was inspected during April 10, 11, 14, 15, 1902.

Number of pupils present, two hundred and twenty-three: boys, one hundred and three; girls one, hundred and twenty; actually in class-rooms, one hundred and ninety-six; sick with measles but in the building, twenty-seven.

Classification of pupils:—

Standard I	48 pupils
" II	36 "
" III	82 "
" IV	36 "
" V	21 "

The teachers are, Rev. Sister St. Alfred, senior girls; Rev. Sister Marianni, junior girls; John B. Fody, senior boys; and Geo. J. Harrison, junior boys.

The class-rooms are bright, airy and well ventilated, and equipment in the way of desks was satisfactory.

The work in each room was conducted with ability, and the pupils were getting the best of training.

The pupils are from the following places :—

	Boys.	Girls.	Total.
Qu'Appelle	54	74	128
Touchwood	10	2	12
Crooked Lakes	19	20	39
Carlton	2	1	3
Moose Mountain	4	6	10
Assiniboine	4	2	6
Pelly	1	4	5
St. Peter's	2	..	2
Brokenhead	1	..	1
Duck Lake	2	4	6
Non-treaty	4	7	11
	103	120	223

Calisthenics form part of the daily exercises for both boys and girls. I spent a day in each class-room, and was much pleased with all the proceedings and the intelligence of the pupils.

Boys and girls alike were warmly and neatly dressed, and the behaviour was all that could be wished for. The good order and system observed in this large school reflected credit on the management.

The staff besides the teachers already mentioned is as follows :—

Rev. Father Hugonard, principal; Rev. O. Robillard, assistant principal; E. D. Sworder, clerk and storekeeper; E. Tourigny, farm instructor; Wm. Crossley, carpenter; D. McDonald, blacksmith; M. Filiatrault, baker; C. Miles, painter, mason and furnaceman; J. B. Ricard, shoemaker; V. Pealapra, tinsmith; Sister Bergeron, tailoress; Sister St. Amand, matron for girls and hospital nurse: Sister Lamothe, matron for boys and hospital nurse; Sister Deschambault, laundress and cook; Sister McMillan, laundress and cook; Dr. M. M. Seymour, medical attendant; J. Watson, assistant farmer, and Rev. Sister Gonlet, matron.

The outbuildings were examined and all found in good condition. The trade-shops were conducted in a business-like way. Twenty boys got the benefit of carpentry instruction during the year, and six of blacksmithing.

The main building was in its usual thorough state of cleanliness.

The picket fencing around the buildings and flower and vegetable gardens was constantly getting out of order from the pickets rotting, the ground being generally low. In order to have a substantial fence, a novel plan was adopted, by placing a stone foundation underneath, stone being plentiful along the borders of the lake; these were hauled by the boys during winter on the ice.

There are about one thousand six hundred yards of fencing, and about two-thirds have already been done, and stone was on the ground for the rest of the work, which will be finished during the summer.

The stone foundation is about two feet above ground level, made with good lime mortar. The pickets are then placed firmly on top, and fastened in with mortar, and the whole rounded off, so that rain or snow cannot lodge, and the pickets will last a long time. The pickets and spars are painted green and yellow, and the fence has a pretty appearance.

The farming operations during 1901 proved successful, and the good crops were a great help in the way of maintenance. The farm work was carried on with greater vigour than ever before, and every boy able to work had to do his share. The results of

harvesting were :—wheat, one thousand five hundred and seventy-four bushels ; oats, two thousand two hundred and seventeen bushels ; barley, six hundred and fifty bushels ; potatoes, nineteen hundred bushels ; turnips, one thousand eight hundred bushels ; mangolds, five hundred bushels ; other roots, one hundred and sixteen bushels ; cabbages, two thousand heads ; tomatoes, sixty bushels ; currants, ten tubs ; pumpkins, seven hundred ; also citrons, melons, rhubarb, pease, &c.

Forty-five acres of new land were broken and fifty-five acres summer-fallowed.

The live stock consists of eighteen horses, twenty-nine head of cattle, thirty-three pigs and seventy-five poultry.

All hands were busy at garden and farm work, as a large crop was to be put in, and an effort was being made to have wheat enough to supply the school wants, some one thousand sacks of flour being required. The crop of 1901 would make up at least five hundred sacks.

The health of the pupils at the time was good, excepting a few who were delicate from after-complications resulting from measles. Over sixty of the younger pupils were attacked, but by the skilful treatment and care of Dr. Seymour all recovered.

Small-pox was prevalent among the half-breeds all around, but not a case occurred in the school.

The school was quarantined for some months on account of measles.

The usual audit of the books took place, and the statements were forwarded to the Commissioner. There was a small deficit at the end of the fiscal year, but the good crop would likely wipe this out. Mr. Sworder keeps the books, stores and all other matters connected with the office in good order, and it is a pleasure to inspect his work.

This school is on the per capita system, and is under the auspices of the Roman Catholic Church.

The Rev. Father Hugonard is as enthusiastic as ever in his work, and we could not but contrast my first visit in 1886, when there were only thirty five pupils, and a small building, with the present large and convenient premises and two hundred and twenty-five pupils.

The electric light was about completed when I left.

Day Star's Day School.

This school is situated in the Touchwood agency and was inspected May 7, 1902. Number of pupils present, eleven : boys, seven ; girls, four ; number on roll, fourteen, graded as follows :—

Standard	I	5 pupils
"	II	3 "
"	III	3 "
"	IV	3 "

Mrs. Smyth, teacher.

The school-room had been whitewashed, and some painting done, a ventilating shaft had been put in the roof, which was an improvement.

I noticed no improvement in the class work, and recommended a change. The teacher seemed to be more interested in other matters than in the school.

The school is under the auspices of the Church of England.

Gordon's Boarding School.

This school, also in the Touchwood agency, was inspected on May 19, 1902. Number of pupils present, thirty : boys, eighteen ; girls, twelve ; number on roll, thirty.

The classification of the pupils was as follows :—

Standard	I	2 pupils
"	II	8 "
"	IV	11 "
"	V	9 "

Mark Williams is principal and teacher, and Mrs. Williams, matron. There is also an outside servant-man, and occasional help in the house.

The class work was going on in a satisfactory way, and the pupils showed careful training. One fault common in all, or nearly all the schools, is to get pupils, especially the older girls, to speak or read out, so that one can hear. They mumble their words in such a way that I doubt if they can hear themselves. With this exception, I consider Mr. Williams is doing good faithful work.

The building was in its usual perfect style as regards cleanliness and tidiness. Mrs. Williams is a splendid housekeeper, and it is a pleasure to visit this school at any time.

An improvement was made in the removal of the old buildings, which were an eyesore. From the lumber of these old buildings a new laundry, 30 x 18 feet, has been made, also a small storehouse, and the rest of the lumber will make an implement-shed.

A new cattle-stable has been added during the year.

The live stock consisted of seven cows, three heifers, two steers, six calves (1902), two horses, and fifty poultry

The house is supplied with milk the year round, and butter is made.

The flower garden is, perhaps, one of the best in the Territories, and the vegetable garden never fails in producing excellent crops, potatoes, turnips, carrots, onions, beets, cabbages, sufficient for the use of the house.

The whole management of this school, outside and in, is excellent.

The finances are looked after by Rev. Mr. Johnson, Fort Qu'Appelle, and the receipts were expected to cover the expenditure up to the end of the fiscal year 1902.

The health of the pupils was good. This is a Church of England school.

Muscowequan's Boarding School.

This is a Roman Catholic school situated in the Touchwood agency and was inspected on May 19, 1902. Number of pupils present, thirty: boys, eighteen, girls, twelve; number on roll, thirty; graded as follows:—

Standard	I	9 pupils
"	II	11 "
"	III	9 "
"	IV	1 "

;

Staff.—Rev. Father Jacobs, principal; Rev. Brother, carpenter and blacksmith Rev. Brother, stableman and farmer; Sister Superior Prince, matron; Sister Valade' teacher; Sister Agnes, care of girls; and Sister Alexander, cook.

The class work was kept up to the standard by Sister Valade, who is a painstaking and capable teacher, and the pupils of this school show more than ordinary intelligence in the subjects taught them, and the general exercises are always most interesting and enjoyable.

The house formerly used as the priest's quarters is now the laundry, the upper part of which is used as a drying-room.

The garden has been enlarged and improved. The crop was a fair one and sufficient vegetables were harvested for winter use. Thirty acres of new land were broken to raise oats for the stock instead of buying them.

The live stock consisted of four horses, thirty-four head of cattle, two pigs, and twenty poultry. Five steers were killed for beef, which supplied the house most of the winter. There is a constant supply of milk, and butter is also made. There is a well equipped combined carpenter and blacksmith shop conducted by one of the Brothers, who is a born mechanic. This Brother has erected a windmill out of plain logs and other timber, not a particle of iron about it.

The mill cuts all the wood required, and can do in two or three days the whole winter's supply. It also pumps the water into the tanks in the upper part of the

house. The only expense about the mill was the purchase of some rope to make connections.

The house was in perfect order, as it always is, and the surroundings, buildings and premises were tidy, and the whole place betokened good and careful management.

The health of the pupils was good. They are well fed and the tables showed no stinting; pupils conduct themselves very nicely at the tables and they are always polite and well behaved.

Crowstand Boarding School.

This school is under the auspices of the Presbyterian Church, and is situated in the Pelly agency. It was inspected June 16, and 17, 1902. Number of pupils present forty-one: boys, twenty-two; girls, nineteen; classified as under:—

Standard I	19	pupils
" II	6	"
" III	13	"
" IV	2	"
" V	1	"
Total	41	

The school-room is well equipped and material ample, nothing being asked for.

Staff.—Rev. Neil Gilmour, principal; Miss Gilmour, matron; Miss Petch, teacher; Miss Dunbar, assistant matron; Miss McLeod, seamstress; F. Favel, farmer and interpreter, and an inside servant.

This is one of the best managed schools I visit, and the class work conducted so ably by Miss Petch is of a higher order than I usually find. I was pleased, therefore, to find that Miss Petch had returned to the work, after an absence of some months.

Miss Gilmour and Miss Dunbar looked well after the various departments and every part of the house was in perfect order, and the dormitories looked tidy with iron beds, painted white, and well supplied with blankets, sheets, pillows, counterpanes, &c.

Some improvements have been made since my last inspection.

A verandah has been put on the front of the house, with a small conservatory at one end, a small storehouse for provisions, 12 x 16 feet; a log stable had been taken down and rebuilt in better style, a neat picket fence placed around the garden and premises, and two thousand yards of fencing constructed around the fields and pasture. The grounds have been levelled, grass seed sown and trees planted, and the whole surroundings were assuming a neat appearance.

A portable bake-oven had been added to the equipment, and it was serving the purpose satisfactorily.

There is a nice stone dairy, a plentiful supply of milk the year round, and butter is made. The ice-house adjoining the dairy is a boon to the school. These are matters that, to my mind, show good management.

The church is six miles from the school, and it is well attended by the Indians. A beginning was made in planting trees in the church-plot, and more was to be done in this line.

The live stock consisted of three horses, two oxen, seven cows, four heifers, one steer, three calves (1902), one pig, one hundred sheep, out on shares, and sixty hens and turkeys.

The crop of 1901 consisted of ten acres of oats and three of roots, and the yield was five hundred bushels of oats, five hundred bushels of potatoes, three hundred bushels of turnips, and fifty bushels of other roots.

Fifteen acres of grain and thirteen acres of roots were put in in 1902, and twenty-two acres of new land broken for next year, making forty acres of land under cultivation.

The water-supply was a source of trouble, as it had to be hauled from the river.

The finances of the school were in good order, and after paying all expenses, the balance on hand, December 31, 1901, was $211.54.

The value of the property is $11,651.69.

Keeseekouse Day School.

This is a Roman Catholic school and in the Pelly agency. It was inspected June 21, 1902. Number of pupils present, five: boys, three; girls, two; number on roll, nine, graded as follows:—

Standard I	6	pupils
" II	3	"

Felix Ingold, teacher.

Rev. Father De Corby, missionary in charge, expects to have a new building ready for boarders in a short time. The new building is off the reserve. In the meantime no one seems to take any interest in the day school, and its continuance does not warrant the expense of keeping it open.

Key's Day School

is a Church of England school in the Pelly agency, and was inspected on June 23, 1902 Number of pupils present, ten—boys, three; girls, seven; number on roll, nineteen, classified as under:—

Standard I	14	pupils
" II	3	"
" III	2	"
Total	19	

Rev. Owen Owens is missionary and teacher.

The pupils were able to answer questions intelligently.

Mr. Owens is an old and capable teacher, and is doing steady, honest work.

The school had recently been kalsomined and painted. Two new black-boards were added, making four in all. The room was neat, tidy and comfortable. There is a small garden attended to by the boys, and potatoes, turnips, carrots, onions, mangolds were looking well.

There is a flag-staff and flag. The mission garden was also looking well, the most advanced I had seen, and Mr. Owens generously gave Mr. McKenzie, the agent, a box full of fine healthy cabbage plants.

Montreal Lake Day School.

This school is under the auspices of the Church of England and was inspected August 19, 1902. Number of pupils present, thirty-five: boys, fourteen; girls, twenty-one; number on roll thirty-five. Classification—

Standard I	28	pupils
" II	1	"
" III	6	"
Total	35	"

John R. Settee, a graduate of Emmanuel College, Prince Albert, is teacher.

The building is log with a bark roof. There are no desks, and the benches are hewn logs. The building is also used for church services. There is a bell on a platform outside. The attendance is only kept up at treaty payments, and some pupils present on the 19th had not been in school since the payments a year ago, as the parents only come once a year.

Mr. Settee was doing a good work, however, and he conducts the Sunday services, and also a large Sunday school in the afternoon. There are about a dozen of houses in the village and there are generally a few families who reside here, so that an average of eight or nine can be kept, but sometimes there are no children. Mr. Settee informed me that he was for a short time last winter the only occupant of the village. Mr. Settee is a good teacher and some of his pupils showed considerable progress. Altogether I was much pleased with Mr. Settee's work in the place, and the Indians have great confidence in him.

Lac la Ronge Day School

was inspected on September 11, 1902. On my way down we passed Little Hills on a Saturday, so I inspected the school on our return.

Number present nine: boys, four; girls, five; number on roll twenty, graded as follows:—

Standard	I	16 pupils
"	II	4 "

The average attendance during the year was about nine.

The building is of a good size and is used for church services when the Indians are there.

There are only two houses besides the teacher's house and the school-house. The day school here is of very little use.

Samuel Abraham, the teacher, is a graduate of Emmanuel College, and I cannot say that he is a success. The pupils knew little beyond repeating the letters of the alphabet. Of course, he is at a disadvantage from the irregular attendance.

The only school that would meet the requirements of this place is a boarding school, as the Indians hunt for hundreds of miles around the lake. The Indians say, if there were a boarding school, they would start it with forty pupils. I heard that the Church of England was moving to establish a boarding school. The day school is a school in name only and might as well be given up.

General Remarks.

This completes my inspection of schools up to September, 1902, and I can say that on the whole progress was found and the teachers are interested in the work.

I have, &c.,

ALEX. McGIBBON,
Inspector of Indian Agencies and Reserves.

British Columbia,
Alberni Boarding School,
Alberni, July 5, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit the annual report of this school for the year ended June 30, 1902.

Location.—This school is well located. It is built on a plateau about sixty feet above the level of the garden, which it overlooks; at the back of the school the country rises to a higher level, and is heavily timbered, giving us abundant shelter from the prevailing winds. In front of the school and about two hundred yards away, flows the beautiful Somas river, and from the school-grounds we obtain a splendid view of the river with Alberni about two miles and a half distant. On the same plateau across the road which divides this property from the reserve is the Shesaht village.

Land.—There are sixteen acres of land in connection with the school The sixteen acres are part of lot 81, district of Alberni. The land is owned by the Presbyterian Church. About half of the land is cleared, giving a large garden, orchard and playground for children.

Buildings.—The buildings consist of main building, 38 x 43 feet, three stories high; the old school-building is used for laundry, bake-shop, carpenter-shop and play-room for boys in wet weather. Other buildings are school-room, wood-shed, driving-shed and root-house. The driving-shed, 16 x 24 feet, was built during the year, the outside of the main building was painted, also wood-shed and the roofs of the root-house and driving-shed. Some new flooring has been laid, a new tank placed outside for water; baths and washing sinks have been placed in boys' and girls' lavatories, and all pipe connections made. This work was done with the assistance of the boys, no outside help being employed. All broken plaster has been repaired this spring and nearly all the rooms kalsomined.

Accommodation.—There is accommodation for forty pupils besides staff. It is to be regretted that the accommodation of the school is so small. All admissions this year were voluntary on the part of the parents and children: there are many who would still come if accommodation were provided. There would be no difficulty providing pupils for a school double the size of the present one.

Attendance.—There are forty-three children on the roll, twenty-six boys and seventeen girls. The average attendance for the year was forty. Five boys and two girls were admitted during the year.

Class-room Work.—The programme of studies authorized by the department is followed. Good progress has been made in the class-room, special attention is given to reading, writing, memorizing and the use of English. The following is the standing in classes at the close of the year:—

Standard I	9	pupils
" II	16	"
" III	6	"
" IV	10	"
" V	2	"
	43	

Farm and Garden.—The stock consists of three horses and four head of cattle. The boys milk and take care of both horses and cows. In our large garden abundant opportunity is given for the boys to learn the initiatory steps of farming. There are about

two hundred fruit-trees in our orchard, comprising apples, pears, peaches, cherries and plums; besides abundance of all varieties of small fruits. Enough potatoes were grown in our garden to supply the school during the year. Some clearing has been done, and many fir-stumps, three to four feet in diameter taken out.

Industries Taught.—The boys are taught how to care for stock, farming, gardening, plain carpentering, painting and baking. The girls receive a thorough training in all that pertains to the keeping of a home; they are obedient and faithful. Many of the girls are small, but such tasks as are required of them, they perform willingly and cheerfully. The girls are taught among other things: the making of bread, the care of milk and butter, the canning of fruit, of which our garden affords a good supply, also cooking, laundry work, sewing and music. The girls are very tidy both in personal appearance and habits.

Moral and Religious Training.—The children attend St. Andrew's Presbyterian church in Alberni every alternate Sabbath, the other Sabbath having service in the school, when their parents also come. Sabbath school every Sabbath at 3 p.m., and Christian Endeavour meeting every Thursday evening. Family worship is held morning and evening. Some of our pupils and ex-pupils have united with St. Andrew's church, Alberni. Many of the young men and women living in the Indian villages are married according to the law of British Columbia. The conduct of the children has been all that could be desired.

Health and Sanitation.—The health of the children during the year has only been fair. Two boys who were in failing health were allowed to go home, another boy was allowed home during convalescence from an attack of pneumonia, but owing to improper care while there, he did not recover. An epidemic of influenza went through the school in the end of May, but all are now well. The sanitary condition of the school is good.

Water Supply.—The water that is used for the school is pumped from the Somas river by the windmill; there is a well for drinking purposes.

Fire Protection.—Four Carr fire extinguishers are placed through the building. Fourteen fire-buckets are kept full in convenient places. The old tank outside the main building has been taken down and a new one with a capacity of 500 gallons has been put in its place; connection has been made with the boys' dormitory from the tank, so that we are now better equipped for fighting fire. There is also one hundred and fifty feet of rubber hose.

Heating and Lighting.—The school is heated by furnace in basement. Ordinary lamps are used for lighting the building.

Recreation.—The playground is now assuming some size owing to so many stumps being taken up. The boys play football and other games. The boys and girls are very fond of swimming and canoeing. In the winter, every evening is set apart for a special purpose; on Wednesday evening the children meet, and spend the time in a social way. Friday evenings we have a concert.

General Remarks.—During the winter a concert was given in Alberni, in aid of our brass band fund; the people of Alberni were greatly surprised at the ability and deportment of the children.

Miss Clara Williams, a graduate of Regina industrial school and a full-blood Assiniboine, has filled the position of assistant matron nearly two years. She has shown great ability in her work in various ways Travelling eleven hundred and fifty miles to take part in the work of uplifting her people, and carrying on the work with true zeal and earnestness, is encouraging to the Church that employs her, and reflects great credit on her alma mater.

I cannot close this report without extending my heartfelt gratitude to Agent Guillod for his kindness and the interest he takes in the welfare of the children. He is ever ready by friendly council and advice to help and advance the welfare of the Indians under his charge.

I have, &c.,

JAS. R. MOTION,
Principal.

British Columbia,
Clayoquot (Bishop Christie) Boarding School,
Clayoquot P.O., July 1, 1902.

The Honourable
The Superintendent General of Indians Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report for the year ended June 30, 1902.

Location.— The Clayoquot (Bishop Christie) boarding school enjoys an ideal location on the gently rising northern shore of St. Mary's bay in Clayoquot sound, on the west coast of Vancouver island, about two miles from the Opitsat reserve, and three miles from Clayoquot post office: it is distant enough to secure privacy and near enough to be of easy access. Verdure-clad mountains and mighty veterans of primeval forest afford it cozy shelter against the prevailing winds.

Land.—The school owns one hundred and ninety-one acres, known as the fractional south-half of section 11, township 1, on the official survey of Clayoquot district. The land, however, is covered with heavy timber and vigorous undergrowth, but it bids fair to make good grazing land at the cost of much money and labour.

Building.—The building, 40 x 60 feet, frame, is divided into two separate equal parts, one for boys and one for girls. On the first floor are found the parlour, the office, the kitchen and separate dining-rooms and class-rooms. The second floor comprises the chapel, two officers' bed-rooms, and two dormitories with twelve beds each. In the attic are two more dormitories with thirteen beds each, and two small bed-rooms. The children's bedsteads are all iron, white enamelled, and each bed is furnished with excelsior mattress, two heavy woollen blankets, double sheets, one pillow and white spread. All the rooms are high, airy and well ventilated; the class-rooms are provided with large windows, admitting a flood of light.

Accommodation.—There is good accommodation for twenty-five boys and twenty-five girls, fifty being the authorized number.

Attendance.—There were forty-four pupils on the roll July 1, 1901, twenty-five boys and nineteen girls. During the year there were admitted thirteen pupils; five boys and eight girls; discharged four, died two, making the present attendance fifty one.

Class-room Work.—The course of studies outlined by the department is followed as closely as possible. All pupils without exception have made gratifying progress in the past year. Their mother tongue has been entirely eradicated and English is spoken by all children in the school. Two of the girls and one boy, who evince special aptitude for it, have received leasons in music during the year; one of these has made such progress as to be able to preside at the organ in religious services, &c., several of the boys and girls also receive special training in singing. Our boys enjoy immensely their band practice, and their progress surpasses the most sanguine expectation of both instructor and friends.

Farm and Garden.—As stated in my last report, the land connected with the school is not cultivated and the few patches cleared this and last year, yield but very little vegetables.

Industries Taught.—Two boys have worked with the carpenter during the past year in keeping the premises in repair and erecting a hen-house and cow-stable, making cupboards, &c., eight boys are now employed in kneading bread, and have become very proficient bakers. The boys have also sawn and split all the wood used during the winter and have in advance a supply to last during the summer months.

The girls assist in the general housework and take their turns regularly in the kitchen. Many are now able, without assistance, to prepare a meal for both officers and pupils. In needlework they have made rapid and gratifying progress, their work during the past winter consisted partly in crocheting lace and underskirts, but two of the pupils also finished some very nice patterns in embroidery, for which they evince special talent: besides these finer works, they also, under the guidance of their instructor, attended to all the darning and mending, and made many pairs of new overalls, jumpers and shirts for the boys, as well as dresses and aprons for themselves.

Moral and Religious Training.—All the pupils receive daily instruction in matters of religion and sound morals; persuasion and example being the guiding principles. The conduct of the children throughout the whole year has been all that could be desired.

Health and Sanitation.—The health of the children during the past year was not as good as in the previous year, as we had two epidemics of grippe in the school. One boy and one girl succumbed to the dreadful disease so prevalent among them, consumption. Outdoor exercise is strictly insisted upon, whenever the weather permits. Sewerage and ventilation are very good. For sanitary conditions the school is ideally located.

Water Supply.—There is an abundant supply of good, cool, crystal water, which is pumped from a clear, mountain stream, by hydraulic ram, into two tanks of fifteen hundred gallons capacity; these are placed sufficiently high to force the water through all parts of the building. An eight hundred gallon tank, is placed near the kitchen and is constantly kept filled with rain-water.

Fire Protection.—This is still very deficient. There are taps on each side of the building, on every floor, and fire-hose, in convenient places, is kept in readiness for any emergencies. Fire-escapes were provided the first year.

Heating and Lighting.—All heating is done by means of stoves; for lighting, coal-oil lamps are used.

Recreation.—For all kinds of outdoor exercise and games, the beach at low tide offers the pupils a unique playground. The boys delight in football, baseball, jumping, vaulting, foot-racing, marbles and in boating and canoeing. Two croquet-grounds, one for the boys and one for the girls, are near the school. The girls have swings on their playground. For the rainy season both boys and girls are well provided with all kinds of indoor games, such as checkers, chess, dominoes and crokinole.

General Remarks.—The past year has been characterized by a spirit of devotedness, contentment and cheerfulness on the part of all pupils without exception, beyond the most ardent expectations, and has been one of remarkable, steady progress in every regard, especially in the acquisition of the English language. The pupils are polite, well-behaved and devotedly attached to the school. Some pupils are exemplary in every respect and exceptionally bright. The prospects for the future of the school are very promising. No great difficulty has been experienced in obtaining new pupils, except by the interference of some old non-progressive Indians. Rev. P. Maurus, the principal, has been absent on a nine month's furlough in the interests of the school. It is to the Rev. A. J. Brabant, who spent several months with us during his absence, our most grateful thanks are due, as through his untiring energy and ardent zeal marked progress in English conversation has been made, and a deep filial love implanted in the hearts of the dear little children, which time will not eradicate. We offer him our thanks also for providing the school with a milch cow and calf, and for a neat picket fence which now adorns the front part of the grounds.

We beg to express our sincere thanks also to the Hon. Thomas Earle, M.P., to whom we are indebted for a very enjoyable day's outing on his charming little steamer, the *Clayoquot*. Indian Agent H. Guillod has made his usual visits to the school, for which thanks are due.

I have, &c.,

SISTER M. PLACIDE,
Principal, pro tem.

British Columbia,
The Port Simpson Girls' Home,
Port Simpson, June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit the following report of the Port Simpson (Crosby Girls' Home) boarding school for year ended June 30, 1902.

Location.—The school is located at Port Simpson, British Columbia, and is situated just outside the limits of the Tsimpsean reserve.

Land.—The land lies in section four, township one, range five, Coast district. It is owned by the Women's Missionary Society of the Methodist Church, Canada, and was acquired by purchase from Mr. Gordon Lockerby, Port Simpson. There is an area of two acres, which is well fenced but for the most part in a rough condition.

The land lies on the slope of a hill, the greatest elevation being toward the south and east. The soil is swampy and requires thorough draining to fit it for cultivation or use in any way.

Buildings.—The buildings consist of a house, wood-shed, chicken-house, drying-shed and water-closets. A new tank has been built during the year, holding 4,000 gallons. A new room for a teacher has been partitioned off the large store-room on third flat and finished. The dimensions are $14\frac{1}{2}$ x $11\frac{1}{2}$ feet.

Accommodation.—Accommodation can be provided for forty-five pupils and four teachers.

Attendance.—The average attendance is thirty-six, with an enrolment of forty-three. The present number in attendance is thirty-seven.

Class-room Work.—In the class-room good progress has been made during the year, notably in English. The pupils all speak English and even at their recreation hours it is the only language heard.

The subjects taught are reading, writing, arithmetic, spelling, dictation, grammar, geography, history, hygiene, music, Bible history and doctrine, and the Methodist catechism.

Garden.—A few flowers, vegetables, berry and currant bushes are cultivated, but owing to unfavourable conditions of soil and climate, little can be accomplished in this line.

Industries Taught.—The industrial teaching consists of instruction in general housework, laundry work, cooking and bread-making. Careful instruction is also given in dressmaking, sewing, knitting and fancy work. Under the supervision of teachers in the different departments the pupils perform all the work of the institution.

Moral and Religious Training.—The pupils are carefully trained to be honest, truthful, obedient, industrious, kind and obliging.

A Bible lesson is taught each day and religious instruction takes a prominent place in the school routine.

Health and Sanitation.—The sanitary condition is good and the drainage excellent. The general health of pupils has been exceptionally good this year. No deaths have occurred and no epidemic except eight cases of a mild form of chicken-pox.

Water Supply.—The water-supply is derived principally from a mountain stream, at some distance from the house, and the water is conducted by a flume to a tank. The rain-water is also received into the tank, from which it is distributed through the house by means of pipes. All water passes through a filter before flowing into the tank. Since the new tank was built, the water-supply is excellent and abundant.

Fire Protection.—We have fire-escapes furnishing means of escape from the upper flats and from all the dormitories. Besides the fire-escapes there are two stationary ladders on the roof and one from the ground to the roof. Two light ladders for moving from place to place are also on hand.

Eighteen water-pails are available in case of fire, and buckets of water and of ashes are always kept in readiness on each flat. Our supply of water is unlimited. Two chemical fire-engines and one fireman's axe are on hand. Mention may also be made of the efficient and well equipped village fire brigade within call at short notice. Fire-drill will be practised.

Heating and Lighting.—The heating is accomplished by means of seven stoves and one grate in which coal and a little wood are burnt.

Coal-oil lamps are used for lighting, bracket and hanging lamps being used exclusively in the pupils' apartments.

Recreation.—Regular hours are set apart for recreation each day. This consists of games, physical culture such as club-swinging and drill, walking, boating, playing on the beach and general play. Exercise in the open air is encouraged and enforced if necessary.

General Remarks.—The year has been characterized by health, a spirit of obedience, contentment and cheerfulness on the part of the pupils, to whom the routine of the institution means a full portion of hard work and study. There is always an effort made to lighten labour by change of employment. Last year hours were given to fancy work in the sewing department and a sum of $40 was realized from a sale of work and given to the Port Simpson hospital. The departure of the principal on furlough early in June and the return of another teacher, are all the changes that have taken place in the staff this year.

At Christmas the girls were given books as presents and great interest is taken in their perusal. Some of the older ones have always a book on hand, and a taste is formed for good literature. Some read fully as much and seem to enjoy it as thoroughly as white children of the same age.

The girls are arranged in sets and pass from one department to another each week. We find this system most satisfactory, and are pleased to say that the pupils perform their duties in a very creditable manner.

Altogether there is much reason to be gratified with the results of the year's work, but we are conscious that there is still room for improvement, and hope to rise to higher attainments each year in knowledge and character-building.

I have, &c.,

(Miss) HANNAH M. PAUL,
Principal.

British Columbia,
Squamish Boarding School,
North Vancouver, July 12, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report for the year ended June 30th 1902.

Location.—The Squamish boarding school is delightfully situated on the north shore of Burrard inlet, immediately opposite the city of Vancouver and about four miles distant therefrom.

Land.—The area of land connected with the school is twenty-one acres, and is the property of the Sisters of the Holy Infant Jesus. About one third of this land is under cultivation in vegetable garden and orchard ; the remainder is uncleared.

Buildings.—The main building consists of entrance-hall, parlour, girls' school-room, two dining-rooms, boys' school-room, kitchen and pantry. The second story is taken up by dormitories for boys and girls, bed-rooms for principal and officers, also a small chapel. The outbuildings consist of wood-shed, laundry, storehouse, stables and hen-house.

Farming and Gardening.—The boys receive instruction in farming and gardening under the supervision of the foreman. The garden is planted with all kinds of vegetables, also strawberries, gooseberry and currant bushes.

Girls' Industrial Work.—The girls do the washing, cooking, baking and learn all the branches of housekeeping ; they are taught hand and machine sewing, plain and fancy work, crocket-work, torchon lace, artificial flowers. They also make their dresses and underwear.

Attendance.—All the pupils are boarders and attend regularly.

Class-room Work.—The work done in the class-room has been both satisfactory and encouraging. The programme of the department has been followed and I can say that the progress made by the boys and girls is very good. English is generally spoken and is quite familiar to all the pupils. The school hours are from 8.30 to 11.30 a.m., and from 4 to 5.30 p.m. At the end of the year the pupils were graded as follows :—

Standard I	8	pupils
" II	12	"
" III	9	"
	29	

Moral and Religious Training.—Religious instruction is daily given for half an hour. All the pupils attend service every morning and prayers are said in common. The pupils are constantly reminded of their duties toward God, their neighbour and themselves, and of the necessity of cleanliness, purity of body and mind. To make our teaching effective, a continual supervision is exercised and all infractions are punished, the usual mode of punishment being to make those guilty do some extra work during recreation hours.

Health and Sanitation.—The health of the pupils has been good during the whole course of the year ; no sickness of a serious nature made its appearance among them. The sanitary conditions and drainage are excellent.

Water Supply.—Our water-supply is good and is obtained from a small creek a short distance from the school.

Fire Protection.—Two Stempel fire-extinguishers, two dozen buckets, two hundred feet of hose and two axes are always kept in readiness for use.

Heating.—The house is heated by wood stoves.

Recreation.—The principal outdoor amusements for the boys are football, baseball, swimming and boating during summer ; in winter they play chess, lotto and dominoes. The girls are fond of reading, dressing dolls, and drawing pictures.

General Remarks.—In closing this report, I wish to express my sincere thanks to Mr. A. W. Vowell, Indian superintendent ; and to Mr. F. Devlin, our agent, who on every occasion shows a very favourable interest in our work.

I have, &c.,

SISTER MARY AMY,
Principal.

British Columbia,
St. Mary's Mission Boarding School,
Mission City, July 10, 1902.

Tho Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report for the fiscal year ended June 30, 1902.

Location.—The St. Mary's Mission boarding school is favoured with a delightful location on the north bank of the Fraser river, in the immediate vicinity of Mission Junction, where a railway branch connects the Canadian Pacific railway main line with Seattle and other important cities in the neighbouring States of Washington and Oregon.

Land.—The land attached to the school is the property of the Oblates of Mary Immaculate, and consists of some three hundred and twenty acres. It is situated in the Mission City district municipality, section 2, townships 3 and 4. Only about one hundred and thirty acres are cleared, which are divided as follows: thirty-five acres under hay, twenty-five under grain, of different kinds, six are planted in vegetables: the flower garden, lawn and playgrounds occupy about five acres, the orchard five; also the remainder is under pasture. The land being a belt of sandy loam is best adapted to fruit-culture. It also yields fair crops of roots and hay.

Buildings.—Our buildings are of wood, with plastered walls. The rooms are lofty and there is an abundance of air and light. I regret, however, to say that the floors, being single and much worn out, as are also the doors and windows, contribute little to our comfort during the cold season. In fact the building, situated as it is on an elevated plateau, is much at the mercy of the sharp winter winds that rush through the Fraser valley. A general repairing of the building might easily remedy this inconvenience, but our present financial standing renders the undertaking impossible.

The boys' school consists of a main building, 90 x 45 feet, including chapel, class-room, library, parlour, dormitory, infirmary, bath-rooms, toilet-rooms, principal's and teacher's rooms, dining-room and kitchen. Another building, 24 x 40 feet, attached to the main building, contains two class-rooms, band-room, shoemaker and carpenter shops, two bed-rooms for employees and supplementary dormitory.

The girls' main building, 90 x 45 feet, with a wing, 24 x 45 feet, contains chapel, class-rooms, parlours, bed-rooms, sewing-room, recreation-room, dormitory, bath-rooms, toilet-rooms, infirmary, dining-rooms and kitchen.

The outbuildings are the laundry, play-house for boys, wood-shed, storehouse, stables and barns.

Accommodation.—As the dormitories and most of the rooms, with the exception of the boys' dining-room and infirmary and the girls' sewing-room, are relatively vast, fair accommodation can be provided for about eighty pupils and necessary staff.

Attendance.—During the month of June we had thirty-eight boys, and forty-six girls. This has been the average number during the whole year.

Class-room Work.—The more advanced boys were instructed by the Rev. Father McKinnon until the month of January, when he was obliged to leave us for a wider field of labour. The vacancy was succesfully filled by Rev. J. Collins. He teaches the fourth and fifth standards, while Mr. T. Theroux is in charge of the second and third. The Rev. Sister Conception has kindly accepted the charge of the younger boys and girls. The senior girls are instructed by Rev. Sister Mary Louis of Jesus, who has

worked with marked success during the past year. The pupils who were on the roll in June were classified as follows :—

Standard I	4	pupils
" II	13	"
" III	26	"
" IV	15	"
" V	5	"
	63	

The regular class-work hours are from 8.30 to 11.45 a.m., and from 4.30 to 6.30 p. m. The younger children who are unable to do manual labour attend class from 1.30 to 3. p.m.

Garden.—The pupils themselves cultivate flowers in abundance and variety, in the immediate surroundings of the school, which adds much to its general good aspect and home-like appearance. The garden itself comprises several acres of land, well cultivated and neatly kept by the brother gardener, under whose able instruction the boys work. All kinds of vegetables are raised for table purposes; such as onions, potatoes, beans, turnips, lettuce, cabbage, &c. Strawberries, currants, rasberries and goosberries are in abundance. The orchard yields fair crops of cherries, apples, plums and pears.

Industries Taught.—The boys receive a thorough training in the art of farming and gardening. They are taught how to take care of live stock, and in fact everything required to make them good and useful husbandmen. The more apt among them are taught elementary carpentering.

The girls are instructed by the sisters, in the culinary department, dressmaking, knitting and general housework. Last year their fancy work was rewarded a first and second prize at the New Westminster exhibition.

Moral and Religious Training.—Half an hour every morning is devoted to religious instruction, given by the reverend principal. The children are required to memorize the principles of Christian doctrine explained and commented upon by him.

Health and Sanitation.—The general health of the pupils has been good. Last winter we had two cases of pneumonia, but owing to the ability of the doctor who attended daily during the whole course of the sickness, and the devotedness of the nurse, our patients soon rallied and are now quite well. The house is generally well ventilated, which greatly favours the sanitary conditions. Baths are frequently given to the children.

Water Supply.—We have an abundance of excellent water, supplied by a never failing mountain stream, known as the Mission creek. It is conveyed in pipes through the entire building.

Fire Protection.—We are provided with four chemical fire-extinguishers, four fireman's axes and forty-eight pails constantly kept in readiness. It is to be regretted that the hose kindly supplied by the department cannot be used with efficiency on account of the weakness of the water-power. Exercises are held frequently in which the girls and young boys are drilled in such a way that in case of fire they would be out of danger in a very short time. The male part of the staff and the bigger boys are taught how to use the fire-appliances on hand.

Heating and Lighting.—The heating is done by means of wood stoves. Light is supplied by coal-oil lamps.

Recreation.—The boys spend their leisure moments, as boys generally know how, at their different games of football, baseball and handball. On Wednesday and Saturday afternoons, they either take a long walk or go on a fishing expedition on the Fraser river. During the course of the year several public entertainments have been given by the pupils. In these, I must say that honour is due chiefly to the girls whose singing and fancy drills were special features highly appreciated. Our boys' brass band has also figured in public, much to the pleasure and satisfaction of the Mission city people.

General Remarks.—It is a pleasure for me to remark the gratitude and attachment generally manifested by our ex-pupils, many of whom are frequent visitors. Several of those who have been recently discharged have expresed the wish to be back again in our midst.

In conclusion, I beg to express my sincere thanks to the Indian Superintendent and to Mr. F. Devlin, our local agent, who have always been ready to lend a helping hand, when the situation required it.

I have, &c.,

J. TAVERNIER, O.M.I.,
Principal.

British Columbia,
Yale (All Hallows) Boarding School,
Yale, July 1, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit herewith my annual report for the year ended June 30, 1902.

Location.—This school is situated about a quarter of a mile from the Canadian Pacific railway station of Yale, B.C.

It stands on the right bank of the Frazer river about a mile below the mouth of the famous Frazer canyon.

The school is not built on a reserve.

Land.—The school-buildings stand in well laid out grounds of about seven acres in extent in the township of Yale.

This land was bought by friends of the school, aided by a government grant of $500, and is held in trust for the school.

The property is bounded on one side by a narrow ravine through which rushes a rapid mountain stream; in front, below a high bank, flows the Frazer river, only separated from the school by the wagon-road and the Canadian Pacific railway line; at the rear of the buildings a high spur of the Cascade mountains rises abruptly, giving an air of picturesqueness and rugged beauty to the whole place.

Buildings.—These consist of a large school-building, a small school chapel, a building formerly used as an extra dormitory, now utilized for a clothing department, and a house for teachers and visitors.

The New England Company gave a grant of $1,660 for additions and improvements.

The school-buildings were painted, and the roofs shingled last August, the walls of the recreation-room were kalsomined, the woodwork varnished and a new floor laid down.

The chapel has been enlarged this spring, by an addition of twelve feet at one end, the walls also are kalsomined, a new floor laid down, and new seats put in.

A contract has just been signed for the erection of a small wing between the main building and the chapel at a cost of $900. It provides for two or three more bed-rooms, a work-room, a small reception-room and a bath-room.

Accommodation.—Accommodation is now provided for thirty pupils and for six teachers and workers; the new wing will allow sleeping accommodation for five more pupils and for the vice principal.

Attendance.—All the pupils are boarders, and they only leave the school for holidays of three weeks duration during the summer, with leave from the department.

Class-room Work.—This is carried on by two Sisters, an English teacher, and the matron, who takes the needlework classes. The elder girls are encouraged to take classes among the younger ones in order to develop their powers of passing on to others the benefit of the education they have themselves received. The usual subjects as recommended by the code are taught throughout the school.

Regular musical drill is having a marked influence on the bearing of the children, and by the development and expansion of the chest, the inherited tendency to lung trouble is greatly minimized.

Class-singing has also proved to be most beneficial in this respect, besides cultivating voices of an unusual sweetness.

Farm and Garden.—About half an acre is at present devoted solely to the cultivation of fruit and vegetables, while flower-beds are laid out nearer the buildings.

Industries Taught.—Housework is most carefully taught in all its branches, including laundry work and bread making. Every year one or two girls go out from the school as domestic servants in good families and command good wages, the thoroughness of their training and their good moral characters combined with neatness of dress and pleasing manners placing them high in the estimation of employers.

Knitting, lace-making and needlework in all its branches obtain careful teaching in the school.

In the spring the children are encouraged to work in the gardens; as a rule this is a very favourite occupation, and it seems to have a particularly beneficial effect on delicate children.

Moral and Religious Training.—Religious instruction is imparted daily, the habit of daily prayers is inculcated, the services in the chapel are by the aid of music, flowers and simplicity of ritual, made as dignified and elevating as possible. The chaplain, the Rev. H. Underhill, the Bishop of the diocese, the Archdeacon of Columbia, and several of the diocesan clergy visit the schools from time to time, and conduct the church's services in the chapel. At the present time there are ten girls who are regular and devout communicants, three of whom were confirmed by the Bishop in May.

Health and Sanitation.—The sanitary condition of the buildings is very good; the drainage having been thoroughly inspected and repaired during the year.

The health of the school has been excellent, there have been no serious cases of illness, and when an epidemic of measles visited the village only seven children in the school caught it, and these were quickly nursed back to health, with no complications or after-effects remaining. One child was sent to hospital for a slight operation on the glands and has since been granted leave of absence for six months, as she is constitutionally very delicate, although within the last year she has been in better health than at any other time in her short life, and has considerably gained in weight.

Water Supply.—There is a plentiful supply of excellent water afforded by a mountain stream close to the house. The water is received in a capacious cistern inclosed in a stone tank-house whence it is distributed throughout both houses by means of iron pipes, while the overflow runs into a 'flume' and is used for irrigating purposes in the vegetable garden.

Fire Protection.—Four Star fire-extinguishers are always at hand. Protection from fire is also afforded by an almost unlimited water-supply; water is laid on in both stories of the main buildings. About one hundred and fifty feet of hose is in constant use, and can be utilized for fire in case of necessity; there are also four long ladders on the premises, a strong axe, and thirty buckets are kept ready for use to meet an emergency.

The children have been trained to fight the fires that occur in the neighbouring brush almost every summer, ignited by sparks from the engine as the train rushes past. In May a large fire was kindled in this way during a spell of very hot weather, in the cemetery, and it was extinguished by the girls, some standing in orderly lines passing on their buckets, others beating down the bushes, and dry undergrowth with wet brooms and cocoanut matting, primitive methods but so successful that by the time the men from the station got to the spot, the fire which had threatened to be serious was well under control.

Heating and Lighting.—The buildings are heated throughout by wood and coal stoves, the pipes passing, in every instance, through brick chimneys.

Coal-oil lamps and candles are used for lighting purposes; as a rule the apartments frequented by the children are only lighted by lamps suspended from the ceiling, or attached by brackets to the wall.

Recreation.—An hour's walk (in suitable weather) is taken daily by the girls under the supervision of a sister or of the matron. When lessons and work permit, and during the intervals specially set apart for recreation, a large playground containing swing, see-saw, summer-house and a long row of small gardens, is in constant use, unless the weather be very inclement, when games, needlework or reading are resorted to in the large recreation-rooms indoors.

General Remarks.—Their Royal Highnesses the Duke and Duchess of Cornwall and York (now Prince and Princess of Wales) attended by their suite honoured the school with a visit last autumn, and were pleased to express great interest in the children they saw here, H. R. H. the Duke being particularly struck by the refined and intelligent faces of the Indian girls.

The following account of the Royal visit to All Hallows appeared in the *Irish Times* of November 2, 1901.

'An interesting incident in the Royal tour through Western Canada has not been recorded on this side of the Atlantic. The Royal train stopped at the gate of All Hallows' Mission of Yale.

'The pupils in varied coloured dresses and carrying each a tall wand of scarlet maple leaves, sang a "Song of Welcome." The Duke of Cornwall learning that the song had been written by the Sister Superior, asked that a copy of the words and music should be sent to him at Halifax. A member of the Royal party described the incident as "the pleasantest function that we have had in Canada."'

ALL HALLOWS SONG OF WELCOME.

Summer has gone with its wealth of sweet roses,
Autumn's gay leaves in profusion abound,
Nature new beauties each morning discloses,
Shadow and sunshine fall softly around.
Far on the mountains the white snow is shining,
Red maple leaves make a canopy fair,
Colours of rainbow all gaily entwining,
Joyously welcome Great Britain's heir.

Bear we to-day our rich garlands of maple,
Emblem of Canada, loyal and brave,
Decked are our houses, from gate to high gable,
Circling about leafy banners we wave.
Whisper the pine-trees, murmur the waters,
Voices of children in unison sing,
Shadow'd by mountains stand Canada's daughters,
Homage to pay to the son of our King.

Land of our birthplace, or land of adoption,
Most fair is the soil of our Canada free.
To her, though we feel ever deepest devotion,
Our hearts still beat loyal, dear England, to thee.
Land of our forebears, and Home of our Empire,
Far east and broad west thy great glories enshrine,
We offer allegiance to son and to sire,
With homage we bow to Victoria's line.

In obedience to the Royal command, this patriotic song, which was specially written for the school, was sent with the music to the Royal yacht at Halifax. In due time the following letter addressed to the principal arrived.

H. M. S. *Ophir*, October 18, 1901.

MADAM,—The Duke of Cornwall and York desires me to thank you for the copy of the 'Song of Welcome' with the music which you have so kindly sent, and which he

will regard as a souvenir of a very gratifying and pretty incident in the journey of Their Royal Highnesses through British Columbia.

Yours faithfully,

ARTHUR BIGGE.

The Rev. Sister Superior,
All Hallows.

The Princess graciously accepted an Indian-made basket filled with yellow egg plums and purple plums picked from the garden, which Milly O'Shâmaist, a Lytton Indian girl, presented.

The closing exercises of the school and the distribution of prizes is always a great annual function.

This year it took place on June 23, when the chaplain, the Rev. H. Underhill, was present and kindly presided.

A pleasant little programme of songs and recitations was exceptionally well rendered by the children, and then a very pretty 'Fancy Drill of Summer Flowers' (Roses and Syringas) was executed with grace and precision, calling down hearty applause from the audience.

Prizes were given for general proficiency, and also for Scripture in each of the five standards. Besides this, prizes for laundry, housework, and bread-making were awarded to the best in each department.

A silver medal for good conduct, and a gold medal (the latter awarded by the Archdeacon of Columbia) for church catechism, were presented to the two senior girls who have now almost finished their school course.

A special prize for progress was given to Milly O'Shâmaist, who in less than four years has passed from the Ist primer into the Vth standard and holds a good position in that class.

She was unable to speak English when she came to school, and is a pure-blooded Indian girl, fourteen years old, belonging to the Lytton reserve. This is a record which we think worthy of note.

She possesses a voice of very rare quality and sweetness, which we hope to be able to put under musical training next term.

The Indian agent has visited the school several times during the year, and has expressed himself satisfied with the work done in it, and with the happy, healthy appearance of the pupils.

I have, &c.,

AMY, SISTER SUPERIOR,
Community All Hallows, Principal.

British Columbia,
Alert Bay Industrial School,
Alert Bay, July 10, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit herewith a report of the Alert Bay industrial school for the fiscal year ended June 30, 1902.

Location.—The school is healthily situated on the Alert Bay industrial school reserve, and is erected on rising ground at the west end of Alert bay and commands a pleasant view to the sea, and is sheltered from northerly winds. The post office address is Alert Bay, British Columbia.

Land.—There are four hundred and ten acres of land connected with the institution. The soil is mostly gravel, and is thickly covered with bush. It is best adapted for pasture-land, although potatoes do well for the first year.

Buildings.—The school-building is of wood, 60 x 40 feet, strongly and tastefully erected, with plastered walls and light, airy rooms. Attached to the main building is a wing, 54 x 18 feet, comprising workshop and play-room. The latter has during the year been altered—three new windows have been added, and it is now used as a class-room. The old class-room in the main building has been divided into a hall and reading-room for the pupils, and office and dispensary for the use of the principal, the old office being used as a sitting-room for the staff.

Accommodation.—There was ample room for twenty-five pupils, principal, matron and one teacher, but last year the number increased and the loft was then temporarily turned into another dormitory.

Attendance.—The attendance has been much better this year, both the boys' and girls' departments being full. There were thirty-three boys and sixteen girls on the roll. The greater number of the boys, however, did not belong to this agency.

Class-room Work.—The work done in the class-rooms has been most satisfactory and encouraging. The pupils without exception have been most anxious to learn, and have made splendid progress. The boys were admirably taught by Miss Northen, and the girls taught as usual by Mrs. Hall in the day school. The pupils were graded as follows:—

Standard	I	10	pupils
"	II	9	"
"	III	13	"
"	IV	10	"
"	V	1	"
"	VI	6	"

Industries Taught.—All the pupils have helped in turn in the general housework, cooking, and washing, and have taken pride in the part allotted so each. Fourteen boys have had regular instruction in the carpenter's shop under Mr. William Halliday, the trades instructor, and good progress has been made. Lessons were given in painting. The mission-house and fence were painted by the pupils.

Moral and Religious Training.—The pupils are continually taught the necessity and advantage of purity of mind and body. Morning and evening prayers are said in the dining-room and a Bible lesson is given daily to each class.

The pupils attend divine service morning and evening, and Sunday school in the afternoon. They attend Friday evening service, and the elder pupils a prayer meeting on Saturday evenings.

Health and Sanitation.—The health of the pupils has been good. The sanitary arrangements are satisfactory. A wooden drain carries away the water from the kitchen, bath-room and wash-house to the sea. Cleanliness is strictly enforced and disinfectants used; ventilation is carefully attended to.

Conduct.—The conduct of all the boys was most satisfactory.

Farm and Garden.—The flower garden has been well attended to by Miss Northen and small pupils. The boys have also had a small plot each, but owing to a late and dry spring these are not so good as last year. The vegetable garden has done well, plenty of fresh vegetables and enough fruit and marrows were yielded to make preserves for the institution. A plot, 94 x 90 feet, was cleared entirely of roots, and sown with grass, and a new piece, 198 x 90 feet, sown with potatoes, which promises to be good This kind of work shows the pupils what can be accomplished with poor soil by a little perservering and painstaking industry.

Water Supply.—The water is supplied to the house from a well near by. The water is pumped up by the pupils into a large tank, which is always kept clean.

Fire Protection.—Four chemical fire-extinguishers, two fireman's axes and twenty-four fire-buckets are kept in places of convenient access. A fire-hose one hundred feet long is kept ready for use. Fire-drill is practised in accordance with the instructions of the department. A fire brigade is stationed on the premises of the saw-mill, which is of easy access to the school.

Heating and Lighting.—The heating is all done by means of ordinary box stoves; chimneys and flues are kept clean. Hanging coal-oil lamps are used.

Recreation.—Good attention is given to the recreations of the pupils in each department. Picture-books, toys and elevating games are supplied. The boys play football a great deal. They are very fond of it, they also play rounders and constantly have sports such as racing, boating, swimming and jumping. Military and musical drill, dumb-bell exercise and action songs have their place. The girls have dolls, games and fancy work.

The band instruments we were fortunate in getting this year have added much to the amusement of the boys and to the attractions of the institution.

General Remarks.—Miss R. L. Edwards has been appointed matron of the girls' home, Miss Carleton, the former matron, having been transferred to missionary work in China.

We shall much miss the kindly visits of the late Mr. Pidcock (Indian agent) he always took so much interest in our work. It has, however, been a pleasure to welcome his successor, Mr. W. DeBeck, who has already assured us of his interest.

The annual conference of the missionaries of the Church Missionary Society was held at Alert Bay this year and they all visited and spoke highly of the work of the institution.

I have, &c.,

A. W. CORKER,
Principal.

British Columbia,
Coqualeetza Industrial Institute,
Chilliwack, Sardis P.O., July 15, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report for the year ended June 30, 1902.

Location.—This institute is located on the south side of the Fraser river, a mile or so from the river in a straight line, but about four miles from the Chilliwack steamboat landing, and three miles from the town of Chilliwack. It is reached by regular daily steamer (except Sunday) from New Westminster, or by Canadian Pacific daily trains to Harrison station, thence to Chilliwack by small steamer and stage. It is not on a reserve.

Land.—The land consists of ninety acres. It is owned by the missionary society of the Methodist Church, for which a rental of $390 per annum is paid. The soil is very fertile, producing excellent crops of hay, grain and roots. It is also well adapted for fruit. The settlement, which is very prosperous, is devoted to mixed farming, into which dairying largely enters. Two creameries are maintained which send out large quantities of excellent butter to the markets of the province. Our land comprises parts of lots, described in the conveyances by which it is held, as lots thirty-eight, and two hundred and seventy-nine, group two, in the district of New Westminster, and is in the Chilliwack municipality.

Buildings.—These are as follows :—

(1) The main building, three story, brick, contains school-room of the senior department, dining-rooms, boys' and girls' dormitories (in the extreme wings respectively), rooms for the staff, and for the principal's family (quite inadequate), sewing-room, laundry, kitchen, pantries, lavatories, and play-rooms.

(2) The kindergarten building, for kindergarten and primary departments, and used for practices by the band.

(3) Residence of the farm instructor and family.

(4) A long frame building, which includes shoe and carpenter's shops, wood-shed, a root-cellar, a flour-room and a drying-room.

(5) Three large barns. One of these has been built during the year for the accommodation of our increasing herd of cattle. Its dimensions are 32 x 52 feet.

Other buildings are a granary, a wagon and implement shed, two tank-houses, a hen-house, a bake-house, and a pig-pen.

Accommodation.—The building will accommodate one hundred pupils, a staff of eight teachers, besides some suitable rooms for the principal and his family.

Attendance.—One hundred and five pupils have been in attendance during the year, the average has been eighty-two plus, fourteen were admitted, sixteen were discharged, and two died. Present attendance is eighty seven, of whom sixty are boys and twenty-seven are girls.

Class-room Work.—The interest of the pupils in their studies during the year, and their diligence and consequent progress, have given us the highest satisfaction. That we should have been able to report twenty-two pupils in the sixth standard last year and sixteen in the same standard this year is, we think, rather remarkable.

The pupils are graded as follows:—

Standard I	11	pupils
" II	21	"
" III	29	"
" IV	21	"
" V	7	"
" VI	16	"

Several of the pupils are in advance of the requirements of the standards under which they are classed, e.g., English grammar, drawing, anatomy, and British history are also taught. A number of our cleverer pupils wish to prepare themselves to pass the entrance examination for the provincial high schools. Twelve of the girls and six of the boys have been receiving lessons in music on the organ during the year, and while all are not equally apt, yet the general improvement has been satisfactory. Three of the girls can preside at the organ in the religious exercises of the institute.

Our most competent pupil, Agnes Murphy, was married from the institute to our most advanced ex-pupil, George Matheson, on February 12, in the presence of the advisory board of the institute. A wedding supper was served, and though toasts were not drunk, speeches of felicitation were made, and all good wishes were expressed for the future happiness of the bride and groom. George, after leaving us, entered Columbian College, New Westminster, and pursued a university matriculation course, reaching a high standing, especially in the languages embraced in the course. Failing health, resulting from too close application to study, made it necessary that he should leave the college. He is now conducting a store at Port Essington, and enjoys the unbounded confidence of his employer. As illustrating what may be accomplished by diligence, determination and perseverance, I think that such instances should be noted with some emphasis when they occur. I hope that they may be multiplied through the medium of every industrial institute in the land.

Farm and Garden.—The yield of field and garden for the past year was excellent Our crops seldom fail in this locality. Contrary to the fears of not a few, the cut-worm pest of last year did not repeat itself, and as a result the harvest of fruits and roots as well as grain was abundant. We reaped eighty tons of hay, fifteen tons of oats, one and a half tons of pease, seven tons of wheat, forty tons of potatoes, twenty tons of carrots and mangolds, with plenty of cabbages, beets, onions, celery and other vegetables for the use of the institute. We brought in for the use of the table over half a ton of small fruit and about the same quantity of cherries and plums. Our pupil butter-makers made over three hundred pounds of butter. We sold, besides, to the creamery, seven hundred and twenty-seven pounds of butter-fat, which yielded twenty-four cents (less a small decimal) per pound of butter, after deducting the cost of manufacturing. We also sold nearly $400 worth of live hogs. This yield of the farm, besides paying the rent, enabled us to make improvements to the property, and maintain it in a condition of repair which would not otherwise have been possible.

Industries Taught.—We seek to familiarize all our boys with every variety of farm work in its season, so that when they shall have gone forth from our school of training, no kind of work will come amiss to them. We have reason for a good deal of self-gratulation in what we learn of the appreciation in which our boys are held, who have been discharged. They are invariably spoken of as active, steady, reliable men; indeed much sought after; and we could well hope that the day is not distant when they shall not be dependent upon such precarious and undesirable means of livelihood as fishing and hunting. We are emphasizing the importance of dairy work, and of being able to do it well. This work contributes to beget ideas of carefulness, gentleness in treatment of animals, promptness, cleanliness, as well as knowledge of the feeding and breeding of cattle. The boys learn to use the cream-separator, and to keep it in proper order. Several of the boys have become expert in milking and are frequently sought for to assist in this work under the stress of shorthandedness from which the neighbouring farmers sometimes suffer in the busy season. The boys cheerfully lend a hand at such

times. They give entire satisfaction, and enjoy, needless to say, the pocket money they receive in recompense for the labour thus bestowed. We find opportunity for giving practical ideas in carpenter work to the boys, in pieces of work so often needful to be done under the direction of the farm instructor, who is also a carpenter by trade, and especially when some building for farm purposes has to be erected, as in the case of the new barn built during the year. The boys in the shoe-shop have become very apt and do not hesitate to do custom work under the eye of the instructor in this department. Some of the boys have also been engaged for a few hours per day during the time set apart for industries, in assisting the butter-maker at the creamery, and so have acquired ideas of creamery work which must be of value to them in after-life. The girls are trained in all the essentials of good housekeeping, such as the care of rooms, scrubbing, work in the laundry, sewing, knitting, darning, the use of the sewing-machine and fancy work ; also work in the kitchen, such as cooking, baking, butter-making.

Moral and Religious Training.—Religious exercises begin with the day in prayers in the dormitories on rising ; family prayers in the dining-room before breakfast, and in the school-room in the evening, always associated with singing by pupils and teachers, and either the reading of the Scriptures or the recitation of Psalms or other suitable portions of the Scriptures by the whole school in concert ; Sabbath school on the Lord's day in the forenoon ; attendance at the Indian church in the neighbourhood in the afternoon ; and preaching service in the evening in the institute. At this latter service a considerable number of the best singers among the pupils together with the teachers constitute a choir, who lead the congregation in the singing and render choice anthems, much to the gratification of the large numbers of people from the surrounding country who attend appreciatively upon this service. On Monday evenings the children meet in catechumen classes for special instruction in the elements of Christian doctrine and experience. On Thursday evenings the regular meeting for prayer is held, and on Saturday evening an hour is set apart for the study of the catechism, while from time to time a series of evenings is set apart with a view to impressing especially upon the pupils the duty of personal consecration of the whole life to the service of God. During the past year there have been times of unusual religious interest, when revival influences have markedly pervaded the whole body of the pupils, the result of which has been that the large majority of the boys and girls have assumed a profession of religion and are exemplifying lives conformable there to. To become established in this life of trust in God must constitute the strongest guarantee for right living when they shall go forth to meet the temptations and engage in the responsibilities of life.

Health and Sanitation.—The health of the pupils has been on the whole remarkably good. It has been the occasion of frequent remark and of no little surprise, (by our physician, among the rest,) that whilst various epidemics, such as measles and whooping-cough, have prevailed throughout the community, and even small-pox has obtained some hold among the Indians at a little distance from us, we have entirely escaped. Our attendance, however, has been prejudiced by reports that have been widely circulated, to the effect that we had measles, mumps and small-pox in the school, and intending pupils have been deterred from coming to us because of these rumours. Parents have written in much anxiety respecting their children, having heard these things. Two children have died during the year, probably the result of inherited weaknesses ; one being a case of consumption, the other of pneumonia.

Water Supply.—This is had from the Lucucuck river, which flows through the farm over a beautiful bed of gravel, and is invaluable as a watering place for the animals of the farm. For the house-supply, a barrel is sunk in the gravel at a little distance from the bed of the stream, into which the water filters plentifully. From thence it is pumped by means of a windmill into an elevated tank, and conveyed through iron pipes to the building for kitchen, laundry, lavatory, and scrubbing purposes, also for fire-protection.

Fire Protection.—This consists (1) in conditions of immunity from fire ; such as the building being of brick ; the heating being by means of hot-air furnaces, and carefully constructed flues ; furnaces in the basement with floors of cement around them, and in the laundry ; furnaces partitioned off by brick walls from adjacent woodwork ; lamps

being placed out of the reach of children, and none being allowed in the dormitories; the baking being done in a detached bakehouse; (2) in means of extinguishing incipient fires; such as, a good supply of water in the tank with taps on different floors; water kept in barrels and buckets in the halls; a well, furnished with a force-pump and attachable hose; a good supply of water-buckets kept at easily accessible points; Carr chemical engines supplied by the department; a fire company organized and drilled with a view of effectiveness in case of fire; (3) in means of escape from the building; such as fire-escapes from the dormitories; easy means of exit by halls and of transit from one wing of the building to the other; fireman's axes supplied by the department; the larger pupils organized to remove the smaller ones from the building at the first alarm of fire.

Heating and Lighting.—The hot-air system is the one in use. The heat is generated from two furnaces of the Smead-Dowd manufacture, and has proved fairly satisfactory. Wood is the fuel exclusively used. For lighting, coal-oil lamps are used. The light in the dormitories is supplied through the transoms from bracket lamps in the halls.

Recreation.—We are careful not to crowd the hours of work and study so as not to allow leisure for recreation. There is usually opportunity for this before breakfast as well as at intervals in other parts of the day. But the evening affords the longest continuous space for games. The pupils are always eager to avail themselves of the opportunities for play. We are always pleased to see this, because of its relation to the health problem, which is after all the most serious one we have to confront. We can enforce order; we can incite to diligence in study or work; we can inculcate habits of carefulness, cleanliness, respect for superiors, and obedience to constituted authority; but if the health fails, our usefulness as an industrial institute is at an end. Eagerness for play is both indicative of health and promotive of it. Variety of games and of modes of recreation is provided and suggested, but it is usually the case that one game monopolizes the interest. For a long time now this has been football. The friendly contests with neighbouring clubs among the white boys have contributed to keep this game in the place of honour; and as a recreation it has much in its favour. In this climate it may be much of the time, even a winter game. For the quieter indoor games it cannot be said that they are much in favour. Some of the boys are fond of checkers and play a really good game, apparently appreciating keenly the genius of it. One other form of recreation maintains its place of unfailing interest and enjoyment, and well deserves it—the band. The practices are engaged in with pure and deep satisfaction. The boys are anxious to excel, and love to learn new tunes and to practise them until they can play them well. They know too when they are able to execute the pieces well. They enjoy a reputation throughout the country round for the excellence of their performances, and are still in demand for garden parties, holding their own in the favour of the people with the white band. The girls, too, love recreation, and they like variety. But they like outdoor exercise and plenty of it. It does not matter so much what it is, if it be outdoor recreation. They are fond of walks in the woods with a teacher. They now keenly relish games of croquet on our beautiful lawn. A new set has just been purchased for their use.

General Remarks.—In submitting my sixth annual report as principal of this institute, I may be permitted to record my deepened sense of the very great value of these institutes in their bearing upon the moral and educational, and therefore upon the material elevation of the youth of our Indian population. Every well-wisher of his country and of the Indian race must rejoice in the evidences which the history of these institutions already furnishes of the good that is being wrought by their means. I cannot conceive how in any other way the same amount of advantage could be secured to them. It deeply concerns the whole community that these people should be converted into good citizens, that they should not be allowed to grow up uncared for, and go to swell the criminal classes of our country. Our government cannot be too highly commended for its faithful efforts, through its Indian Department with its superintendents and agents, and its system of institutes and schools with their staffs of instructors and

teachers, to accomplish in the most successful manner possible (as it seems to me), and in harmony with the genius of our Christian civilization, the amelioration of this long degraded race.

I have, &c.,

JOSEPH HALL,
Principal

British Columbia,
Kamloops Industrial School,
Kamloops, July 14, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to forward my annual report for the year ended June 30, 1902.

Location.—The Kamloops industrial school is situated at the foot of St. Paul's mountain, on the northern bank of the South Thompson river. It is in the immediate vicinity of the Kamloops reserve and about two miles from the town of Kamloops, which is a divisional point of the Canadian Pacific railway. The background of bordering hills and the fine groves lining both banks of the river make the position of the school very pleasant in the spring and summer.

Land.—The area of land belonging to the school comprises three hundred and twenty acres, surrendered by the Indians of the Kamloops reserve for the purposes of the industrial school. Of this land, about fifteen acres are under cultivation in fields, garden and orchard; the remainder, consisting of sandy hills and broken land, is fit only for grazing. There is no natural grass to be cut for hay, nor is there any timber available for fuel.

Buildings.—The main building contains on the ground floor the parlour, office, dining-room, kitchen and the laundry, with four bath-rooms and bake-oven. The second story is taken up by the girls' class-room and the chapel. To the right is the girls' house, containing sewing and recreation room, dining-room for the Sisters and girls, and dormitories. To the north, about one hundred feet from the main building, is the boys' home, which contains store-rooms recreation rooms, dormitory and class-room. The outbuildings consist of the carpenter and shoe shops, two stables and barn, the cellar, the ice-house, the three-room cottage for employees, the hen-house, the girls' summer-house, the windmill and the tank-tower. The addition to the girls' house, which consists of a large work and recreation room and a dormitory, 34 x 22 feet, has been completed in a workman-like manner by the new foreman and boys. It is now occupied, to the great satisfaction and comfort of the girls. A small plot in front of it has been inclosed by a neat lattice fence, but this was not done in time to permit the planting of trees this season.

All the buildings are in good condition; the kitchen floor has been renovated and part of the main buildings has been re-painted.

Accommodation.—The school can easily accommodate sixty pupils and seven officers.

Attendance.—At the end of the year, twenty-six boys and twenty-seven girls were in attendance; the average attendance was about fifty-two during the year. Three girls were regularly discharged; three boys were unable to return to school after the summer holidays of 1901, in consequence of disease or accidents. Two boys and four girls were admitted.

Class room Work.—The school hours for the boys were in the morning from a quarter to nine till twelve, every week-day, except Saturday; and in the afternoon of every week-day, from a quarter to five till a quarter past six. Examination of the boys at the end of the year showed a great improvement in the different branches, and especially in composition.

The girls, under the kind management of the Sisters of St Ann, have continued to improve slowly; they attended school from two to five in the afternoon, with half an hour's study in the evening.

At the end of the year, the pupils were graded as follows:—

Standard	I	6 pupils
"	II	7 "
"	III	7 "
"	IV	15 "
"	V	13 "
"	VI	5 "
		53

Farm and Garden.—We have only about four acres of land which can be irrigated, and at the same time must be protected by a dyke against the periodical overflows of the Thompson river. Usually, we manage to get out of that land all the roots and vegetables needed for the institution, but in consequence of the excessive drought of the summer of 1901, our crop of potatoes was very light, and we had to purchase some this spring. At this date the crops, comprising potatoes, pease, beans, beets, carrots, onions, corn, cabbages and turnips, look well. The work of irrigation takes up a great deal of time; it is done by means of a windmill, and a 'Myers' horse-power and 'Low down' pump combined; occasionally, we are able to obtain water from the Indians' irrigation ditch.

Raspberries, currants and gooseberries are plentiful; the vines are well fruited; some of the apple and plum trees promise an abundant yield.

The alfalfa, growing on land where water for irrigation cannot be brought on, was cut for the first crop in the latter end of June; it yielded about four tons to the acre. Oats and wheat sown for fodder, did not start to grow till after the heavy rains which fell in the month of June.

All the boys work in the fields and garden; the big boys do the heavy part of the work, and the small boys are kept busy in weeding and irrigating. They milk the cows and attend to the stable work in turn, outside of the regular work-hours.

Our stock consists of only four horses, six cows, one yearling heifer and six calves.

Industries Taught.—*Carpentering.*—Twelve boys have received instruction in this trade from the new carpenter in charge, Mr. L. Viel, who is an excellent mechanic. They have completed in a workmanlike manner the new recreation-room and dormitory of the girls, and built a neat lattice fence and verandah railing.

Painting.—The boys have painted the interior of the new building and repainted partly the exterior of the old buildings; they have done the work very well.

Shoemaking.—Four boys have been employed in the shoe-shop, under the direction of one of the old pupils; their work consisted chiefly in repairing shoes and harness, although they made also new shoes.

Girls' Work.—The girls do the cooking, baking, washing, and learn all the branches of housekeeping. They are taught hand and machine sewing, plain and fancy needle-work, crochet-work, and the making of lace and artificial flowers. They have made all their dresses and underwear, and also the shirts and drawers of the boys. Their handiwork is greatly admired by all the visitors, who never fail to praise the neat and clean appearance of the girls.

Moral and Religious Training.—The moral training of the children is carefully attended to by constant teaching and supervision. The correction, duly administered, of

an infraction of the rules of morality, is often more successful in building up moral character than long exhortations: hence we never fail to reprehend the wrong-doers, and to punish them if deemed necessary. The usual mode of punishment is to make the pupils do some extra work during recreation hours. Sometimes, the wild nature of the Indian re-asserts itself: some boys deserted one night last fall, and on their return, they were told that they would have to stay at the school three days longer than the other pupils during the summer holidays: this rule was adhered to, and they spent the days appointed in working on the farm and in the garden. Religious instruction is given daily for half an hour. Morning and evening prayers are said in common. On Sunday the pupils assemble three times in the chapel, and one hour is devoted to the singing of hymns and to the explanation of the Gospel.

Health and Sanitation.—In general, the children of this school enjoy excellent health. However, we have to record this year the death of a little girl, which took place at her home; another little girl had to be discharged for disease of the eyes. In April, we were visited by an epidemic of measles, which gave us considerable trouble; as many as fourteen pupils were confined to bed at the same time.

The sanitary condition is satisfactory. The sewerage drain is working well; ventilation is done by means of the windows and carefully attended to: lye and chloride of lime are used as disinfectants.

Water Supply.—Good water is supplied to the house from a well dug near the river. The pump is operated by horse-power, and water is kept in a tank, placed near the kitchen. This tank was renewed this year; it is lined inside with galvanized iron and covered all around with sawdust. Thus the water is kept fresh and pure from all pollution.

Fire Protection.—The fire-appliances on hand are as follows:—

1. Four chemical extinguishers, furnished by the department.
2. Two fireman's axes, also supplied by the department.
3. Three strong ladders permanently attached to the principal buildings, and a few smaller ones kept in proximity to the buildings.
4. About two dozen fire-buckets.
5. Two tanks: one of a capacity of eighteen hundred gallons, with two taps; and the other, of a capacity of about twelve hundred gallons, placed on a tower thirty feet high. In connection with this tank, there are one hundred feet of one and one-quarter inch rubber hose, which can be attached to any of the three hydrants placed at convenient spots, so that a stream of water may be directed to any part of the boys' and girls' buildings. These tanks were heretofore filled up by means of a force-pump, operated by horse-power. But as this process was considered too slow and inefficient in case of fire, it has been found advisable to purchase a new bull-dozer pump, which has a two inch suction and discharge pipe; this pump will be operated with a three-horse power gasoline engine. These machines are now on hand, but have not yet been put in position. A more abundant supply of water will also enable us to raise shade-trees about the buildings.

Heating and Lighting.—Ordinary box-stoves are used for the purpose of heating, and coal-oil is the only means of lighting.

Recreation.—The pupils have half an hour of recreation in the morning, half an hour at noon, and in the evening from half past six till bed-time. Football and base-ball in summer, skating in winter, are the principal outdoor sports. The brass band provides occasionally another form of recreation.

The girls indulge in the ordinary amusements suitable to their sex; some of them are very fond of reading. On Sundays and holidays, walks, drives and excursions are in order. But the chief delight of the pupils is to listen to the gramophone or the phonograph.

General Remarks.—It is gratifying to state that the majority of the pupils discharged from this school, are doing well. Some are working on farms and others on the railroad; of the girls, some are married and live on the reserves.

In closing this report, I wish to express my high appreciation of the interest taken in our school by Mr. Vowell, Indian superintendent, who, in his official visits, examined

the children and expressed his satisfaction at the progress made by them. I would also acknowledge with pleasure the promptness of Mr. Irwin, Indian agent, in giving me assistance.

I have, &c.,

ALPH. M. CARION, O.M.I.,
Principal.

British Columbia,
Kootenay Industrial School,
St. Eugène P.O., June 30, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my report for the year ended June 30, 1902.

Location.—This school is situated in a beautiful valley on St. Mary's reserve, and in close communication with the railway system. The extent of the premises, the beautiful gardens, and spacious playgrounds offer favourable opportunities for healthy recreation and exercise. A splendid view of the surrounding mountains can be had from the buildings. The air is pure and bracing.

Land.—The farm attached to the school consists of twenty acres owned by the department. We have also rented a hundred and twenty acres, in order that the boys might receive a more thorough training in farming, as this has proved most useful and beneficial to them. The land is mostly level and affords good pasturage; by irrigating, excellent crops are raised each year.

Buildings.—Three detached buildings are devoted to school purposes. The central one is reserved for the staff, and contains: parlour, office, dining-room, girls' school-room, bed-rooms, and kitchen. This year a cold storage, 16 x 16 feet, containing all modern improvements, was erected adjoining the kitchen. It is found to be most convenient and insures safe storage for meat, butter and other articles of food. The girls' home is used for sewing and recreation-room, refectory, lavatory, wardrobes, dormitory, and bed-room. The boys' home has on the lower floor: school-room, play-room, lavatory, dining-room and wardrobes; the upper floor comprises two dormitories and a bed-room. The bedsteads are of iron, each is well and comfortably furnished. The mattresses were renewed last fall and the dormitories were painted by the larger boys. The outbuildings are bakery, laundry, and supply store, foreman's house, shoe-shop and wood-shed, carpenter-shop, barn and stable.

Accommodation.—There is ample room for sixty pupils and eight members of the staff.

Attendance.—The average attendance during the term was fifty-six.

Class-room Work.—This was carried on by two teachers, in separate rooms. The school-hours for the boys were, in the morning, from 8 till 11.15, with a half hour's study in the evening. The girls have school in the afternoon from 1 to 4, and study from 6 until 7 every evening. The class-rooms are appropriately furnished with patent desks, slate black-boards, maps, charts, a globe and lesson cards. The programme of

studies authorized by the department is adhered to. The progress was satisfactory. At the close of the term the pupils were graded as follows:—

Standard	I	5 pupils
"	II	12 "
"	III	14 "
"	IV	10 "
"	V	10 "
"	VI	1 "
		52

Farm and Garden.—Prominence is given in many ways to this important department, as it is an occupation for which our boys evince a special aptitude, and in which many of our ex-pupils are gaining a comfortable and honourable living. The larger boys, under the supervision of the foreman, did the greater part of the ploughing, harrowing, and seeding. The gardens and orchards are planted with various kinds of vegetables besides gooseberry, currant, and raspberry bushes and fruit-trees. The cold spring has somewhat retarded the growth of the vegetables and grain, nevertheless the present appearance is promising. The abundant rains have saved much labour in the way of irrigating.

Industries Taught.—As before stated, agriculture is the principal industry of the boys. They also take care of the cattle and horses, besides hauling, sawing, and splitting all the wood used by the institution.

Carpentry.—The different improvements made in this line, gave the boys an opportunity of acquiring handiness in the use of carpenter's tools. They assisted the carpenter in erecting a porch in front of their house, renewed the sidewalks, built and repaired fences, and kept the premises in order.

Shoemaking.—This is confined chiefly to mending shoes and harness, which is very creditably done.

Girls' Industrial Work.—The girls attend to the general housework and take their turns at the kitchen, laundry and bakery. Three hours each day are devoted to hand and machine sewing. They are taught cutting, fitting and finishing dresses, also mending and darning. In this department, they did exceedingly well, having made several dozens of dresses and aprons, as well as mending their own and a part of the boys' clothing, and knitting many pairs of stockings.

Moral and Religious Training.—Great care is given to this important part of education and no effort is spared to instruct the pupils thoroughly in moral and religious subjects. All the pupils receive daily instruction in Christian doctrine. The conduct throughout the year has been all that could be desired.

Health and Sanitation.—The general health has been very good this year. There were no cases of serious illness, though a mild form of grippe prevailed during winter. The ventilation is good and the premises are kept clean.

Water Supply.—An abundance of excellent water is obtained from St. Joseph's creek, a never-failing mountain stream. This is used for irrigating and is conveyed in trenches through the fields and gardens. For domestic purposes the water is obtained from two wells, one in the boys' and the other in the kitchen yard.

Fire Protection.—Each department is supplied with a chemical fire-extinguisher, a fireman's axe, several buckets, a ladder and a hose. These are stationed at convenient places throughout the buildings.

Heating and Lighting.—All heating is done by means of stoves. Bracket lamps are used exclusively in the pupils' apartments.

Recreation.—A portion of each day is set aside for recreation. When the weather is favourable, the children enjoy outdoor games in their respective playgrounds. The boys' principal games are football and baseball. During the summer season they indulge

in swimming, fishing, hunting, and riding. The winter evenings are spent with music, singing, picture and story books, the gramophone, the magic lantern, and numerous indoor games. Skating and sleighing are the favourite outdoor winter amusements.

General Remarks.—In conclusion, I desire to state that this year on the whole has been one of progress. The pupils, with few exceptions, did well at class and trade. A large number of visitors were received and many very creditable receptions were given by the pupils.

I wish to tender my sincere thanks to our Indian superintendent, Mr. A. W. Vowell, for his unremitting attention and kindness in behalf of the school. Also to our respected agent, Mr. R. L. T. Galbraith, who visited the class-rooms several times, examined the children, and in every way contributed to their advancement and welfare.

I have, &c.,

N. COCCOLA,
Principal.

British Columbia,
Kuper Island Industrial School,
Kuper Island P. O., July 2, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit my annual report for the fiscal year ended June 30, 1902.

Location.—The position of this school is in Telegraph bay, on the southwest side of Kuper island, in Stuart channel, about five miles from Chemainus station, Vancouver island. Its position is pleasant and salubrious; the sea breeze tempers the heat of the midsummer day and renders the night cool and refreshing.

Land.—About seventy acres of land are used in connection with the school. This land forms part of the Penelakut reserve, and was surrendered by the Kuper Island Indians for school purposes. It is mostly level, pretty well cleared of timber and is best adapted for pasturage.

Trees.—Shade-trees of different varieties ornament the playgrounds; their foliage affords pleasant shelter from the rays of the sun. Our two hundred fruit-trees are thriving and give promise of an abundant crop.

Buildings.—The buildings, which are eighteen in number, stand in two rows and command a magnificent view of the sea; they are kept in excellent condition and repair.

Front row :—

(1.) The girls' home comprises on the ground floor: sewing-room, infirmary for girls, store-room, recreation-room and office for matron; on the second floor: girls' dormitories, linen and bath rooms and rooms for the female members of the staff.

(2.) The central building contains on the ground floor: parlour, office, boys' dining-room, kitchen, pantry and girls' dining-room. On the second floor are the girls' school-room, the music-hall, the chapel and two guest-rooms.

(3.) The boys' home is divided on the lower floor as follows: boys' infirmary; teacher's room; store-room, band-room, lavatory and bath-rooms, boys' play-hall and their school-room. On the upper floor are linen-room, boys' dormitory and bed-rooms for the male members of the staff.

(4.) Boat-house, to shelter four boats.

Rear row :—

(5.) Bakery, with modern brick oven.
(6.) Wood-shed for bakery and laundry.
(7.) Laundry and drying-house with three furnaces and boilers.
(8.) Dairy with modern improvements.
(9.) Wood-shed for kitchen and heating purposes, with tool and oil compartments.
(10.) Gymnasium ; also used for concerts and entertainments.
(11.) Carpenter and shoemaker shops.
(12.) Lumber-shed.
(13.) Water tank.
(14.) Hen-house.
(15.) Pig-pens.
(16.) Stables.
(17.) Barns and implement-shed.

Since my last report only one new building was erected ; viz. :

(18) Residence for foreman, 34 x 24 feet, divided into four rooms, viz. : kitchen, sitting-room and two bed-rooms ; with a wood-shed attached, the dimensions of which are 18 x 14 feet. This building stands in the front row about four hundred yards from the boys' home.

Accommodation.—The school can accommodate comfortably seventy-five pupils and eight officers.

Attendance.—The average attendance during the year was a fraction over sixty-two.

Class-room Work.—The work in the school-rooms has been very gratifying. The monthly written and oral examinations, which were introduced this year, seemed to stimulate the pupils' ambition. The boys and the girls are taught in separate buildings and by different teachers.

At the close of the year the pupils were graded as follows :—

Standard	I	6	pupils
"	II	3	"
"	III	17	"
"	IV	15	"
"	V	12	"
"	VI	16	"
	Total	69	

Of this number forty-one were boys and twenty-eight girls.

Farm and Garden.—Nearly all the boys are instructed in gardening and farming. The boys who learn trades also work on the farm when not engaged in the shops, as we deem it most advisable that every boy upon his leaving the school, should be acquainted with the rudiments of farming.

Boys' Industrial Work.—*Carpentry.*—Six boys have been learning carpentry and assisted the foreman in building his house, making new furniture for the school and repairing wherever needed.

Shoemaking.—The six apprentices in this trade, under the able instruction of Mr. J. M. Read, worked very faithfully, and some of them are now competent to make new shoes without the instructor's assistance.

Painting.—Four boys attended to all the painting required.

Baking.—All the senior boys and girls have learned baking.

Besides these industrial branches, lessons in milking, butter-making and laundrying have been imparted to all the senior boys.

Girls' Industrial Work.—Under the very efficient and painstaking management of Sister Mary Albert, the girls have made most commendable progress in all kinds of house-

work, hand and machine sewing, cutting and finishing dresses and other wearing apparel. They have also done a great deal of fancy work, for which they show great skill and aptitude.

Moral and Religious Training.—Religious instruction is given half an hour each day and the strictest attention is paid to the morality of the pupils. The conduct of the pupils was excellent; very few infractions of the rules having occurred.

Health and Sanitation.—The health of the pupils was good. No deaths occurred, and with one or two exceptions, none were seriously sick. The sanitary condition is now almost perfect. The ventilation of the school-rooms and dormitories is carefully attended to, and the premises are kept scrupulously clean.

Water Supply.—An abundant supply of pure fresh water is always on hand and a hydraulic ram conveys the water through the buildings.

Fire Protection.—The pupils are bi-monthly drilled in the use of fire-appliances, which consist of three Star chemical fire-engines, twenty fire-buckets, one hundred feet of fire-hose and two fire-axes. There are fire-ladders on the roofs of all the buildings, and other ladders are handy to reach the roofs quickly. There are also stand-pipes near all the principal buildings, to which the fire-hose can be readily attached. In most of the apartments there are water taps with which the fire-hose can speedily be connected, Fire-escapes are attached to the dormitories.

Heating and Lighting.—The heating of the buildings is done by ordinary wood-stoves, while the lighting is done by means of coal-oil lamps.

Recreation.—Baseball, football, swimming and boating are the principal outdoor amusements of the boys. They continue to take great delight in their band practices. The girls enjoy skipping, swinging and handball. The indoor games for all consist of chess, checkers, dominoes, lotto and picture puzzles.

General Remarks.—It gives me great pleasure to report that in Mr. Henry Butsch the school has secured a most efficient foreman: he is a very skilful mechanic and a good band-leader. His gentle treatment has endeared him to the good will of the pupils.

In closing my report, I beg to tender my sincere thanks to Mr. A. W. Vowell, Indian superintendent, for his unremitting kindness and attention to all matters connected with the school. I must also gratefully acknowledge the services rendered during the year by Agent Robertson.

I have, &c.,

G. DONCKELE,
Principal.

British Columbia,
Metlakahtla Industrial School,
Metlakahtla, July 25, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

Sir,—I have the honour to submit this report for the year ended June 30, 1902.

Location.—This school is situated in the village of Metlakahtla, on the reserve of that name, on the western side of the Tsimpsean peninsula. It has an extensive and pleasingly diversified view of both land and sea.

Land.—The land was surrendered by the Indians of Metlakahtla for the purposes of a school. Its area is only six acres, but that is more than can be easily or profitably utilized, the soil, except a small part immediately adjoining the school, being difficult to clear and trench, and of poor quality.

Buildings.—Twelve months ago a fire, originating in the mission, destroyed all the buildings belonging to the girls' division, and also the laundry and workshops of this school. Ten buildings, including nearly all that belonged to the Church Missionary Society, were by that fire reduced to ashes, but the one which formed the laundry and workshops of this school was the only one destroyed that belonged to the government. The present buildings are: one main building, occupied by the pupils and staff; a school-house in which class instruction is given; a building divided into carpenter and shoemaker's shops, store and laundry, rebuilt since the fire, a blacksmith's shop and coal house: also a stable and fowl-house.

Accommodation.—At the close of the period covered by my last annual report, this school had ample accommodation for fifty pupils and a staff of six; but the destruction of the girls' division left only accommodation for twenty-eight boys and three officers. A few months ago the Indians gave the building formerly used as the village hospital, for the temporary accommodation of the girls who were awaiting re-admission, and some necessary repairs and alterations were made to fit it for their reception. It is, however, not a suitable building for a school, either in its construction or location; but it was considered advisable to make a beginning in anticipation of something better being ultimately provided.

Attendance.—After the fire, the girls for want of accommodation were all sent home to their parents, and the school was carried on with twenty-six boys in attendance. During last May, five of the girls were re-admitted, and that brought the number of pupils up to thirty-one.

Class-room Work.—The subjects of study and instruction were reading, writing, arithmetic, composition, history, drawing and religious knowledge. Fair progress was made. The standing of the pupils on the roll for last quarter was as follows:—

Standard III	8	pupils
" IV	14	"
" V	9	"

Garden.—The garden is planted with gooseberry, blackberry, currant and raspberry bushes, also a variety of useful vegetables, and all these grow well; but attempts to grow apples, pears, plums and cherries have so far been a failure That, however, is a result not by any means unexpected. I am not aware of any decided success in growing such fruit in this latitude, or anywhere on this side of the Bella Coola valley, which lies about one hundred and fifty miles further south.

Industries Taught.—Eleven pupils received instruction in carpentry. They put up a new building, 25 x 62 feet, divided into shoemaker's and carpenter shops, store and laundry, made seats, desks, tables and other articles of furniture, and also alterations in the former hospital to fit it for the reception of the girls, repaired buildings and fences. Three pupils did the shoe-mending for the school, and all of the boys worked from time to time at gardening.

Moral and Religious Training.—In the class-room three quarters of an hour were given every day, except Saturdays, to devotional exercises and religious instruction. On Sundays the children attended divine service, both morning and evening, and Sunday school in the afternoon; and were daily taught the importance of doing what was right.

Health and Sanitation.—The health of the pupils was good. There was very little sickness and no deaths in the institution. In the boys' dormitories, the lower window sashes are raised a little, to allow an upward flow of fresh air between the sashes. There are also ventilators in the walls and ceilings. The closets are at a distance from the school, and an underground drain carries the refuse from the kitchen to the sea.

Water Supply.—The rain that falls on the buildings is conveyed into four tanks, having an aggregate capacity of about six thousand gallons. The tanks are cleaned out as frequently as circumstances admit, and the water is generally good; but in dry weather it sometimes becomes rather impure, and before running it off, the chances of getting a fresh supply have first to be carefully considered. The best is done, however, that can, under existing circumstances.

Fire Protection.—The appliances on hand are four glass-lined chemical fire-extinguishers, and chemicals, one hook and two hand ladders, two fireman's axes, four zinc buckets, and the four water-tanks mentioned under the heading 'Water Supply.'

Another tank, a small force-pump and necessary hose are needed. The main building, the most valuable part of the government property belonging to this institution, was saved on the day of the fire, just through the conservation of a sufficient supply of water, and having the use of the Indian fire company's pump.

The chimneys are made of terra-cotta pipes and are frequently cleaned.

There are three stairways which give means of egress in different directions from the dormitories. The pupils are frequently exercised in the use of the fire-appliances.

Heating.—The rooms on the lower floor are heated by coal stoves, but the dormitories are not heated.

Recreation.—The boys in fine weather enjoy themselves at football and baseball. They also practise swimming in summer. Their indoor games are chiefly draughts, crokinole and dominoes.

General Remarks.—After the girls were sent to the homes of their parents, Miss Davies, the matron, and Miss Jackson, the teacher, went on furlough to England.

Miss Davies has since returned and gathered in a few of the girls, and is making preparation for the accommodation of more.

Mr. Todd, Indian agent, visited the school several times during the year.

The Sunday school is under the kind superintendence of Miss West, assisted by other ladies.

The department promptly furnished the means for rebuilding our workshops.

I have, &c.,

JNO. R. SCOTT,
Principal.

BRITISH COLUMBIA,
WILLIAMS LAKE INDUSTRIAL SCHOOL,
150-MILE HOUSE P. O., July 8, 1902.

The Honourable
The Superintendent General of Indian Affairs,
Ottawa.

SIR,—I have the honour to submit the following report for the year ended June 30, 1902.

Location.—The Williams Lake industrial school is pleasantly situated in the Lac la Hache valley near Sugar Cane reserve.

Land.—The land in connection with the school is all the property of the Corporation of the Oblates. The greatest part of it is only pasture-land.

Buildings.—No new buildings have been erected this year, and only small repairs have been done in the boys' and girls' school.

Accommodation.—Accommodation can be provided in the boys' department for forty, and in the girls' department for thirty-five pupils with necessary staff.

Attendance.—The attendance, I am sorry to say, was not very regular, especially last fall. The children ran away too frequently and too easily; they did not seem to find anything reprehensible in this, so we were forced to set an example in having a few of them expelled. This had a salutary effect, both on the parents and the children.

Class-room Work.—Gratifying progress was made in the school-room by the two departments; but I am pleased to record here the progress made by the boys in writing

especially since March. A great stimulus to them was the reading out of their good marks in all the branches at the beginning of every week.

The grading by standards is :—

Standard	I	6 pupils
"	II	6 "
"	III	16 "
"	IV	13 "
"	V	4 "
"	VI	2 "
		47 "

Farm and Garden.—Owing to the exceptionally cold weather, the different crops are backward this year without being, so far, a complete failure.

Industries Taught.—*Agriculture.*—Most of our boys are still too small to be employed regularly on the farm ; only five of the bigger ones, after duly preparing a piece of land of about one acre, planted it with potatoes, that promise to give a good crop.

Harness-making.—Owing to the prolonged absence of Mr. Horan, little work was done in the harness-shop, only one boy being employed.

Carpentry.—Three boys have constantly been employed in this shop with good results. They finished the building that was begun last year and made, besides, some articles of furniture, that are a credit to them.

Girls' Work.—The girls under the kind management of Sister Euphrasia receive regular instruction in general housework ; also in hand and machine sewing, in knitting, darning and mending ; not a few are doing surprisingly well.

Moral and Religious Training.—In the boys' and girls' departments a half hour's religious intruction is given daily. Morning and evening prayers are said in common, and on Sundays the children attend divine service in the church. By these means and thanks to a kind but continuous supervision exercised over them, the pupils continue to improve in conduct both moral and otherwise.

Health and Sanitation.—Two of our pupils, I am sorry to say, died during the year ; the health of the others has been very good. The sanitary condition can also be described as good.

Water Supply.—Water is obtained from a spring on the mountain and conveyed through iron pipes to all the buildings.

Fire Protection.—All fire-appliances are in good order. Four Carr glass-lined fire extinguishers, fire-hose, pails and ladders are always at hand.

Heating and Lighting.—Our buildings are all heated by ordinary box-stoves and coal oil is the only means of lighting.

Recreation.—Considerable work was done by the boys in levelling their playground. They indulge in every kind of sport, but their favourite game is football. The girls amuse themselves in games suitable to their sex.

General Remarks.—Five boys and one girl have been admitted, and two girls regularly discharged. The tears they shed in departing from their alma mater proved sufficiently the esteem in which they held their good teachers and the school.

In concluding, it gives me great pleasure to thank Superintendant A. W. Vowell and Agent E. Bell for the great interest shown this school in every available circumstance. Too much praise cannot be given the employees of the school, especially the kind Sisters, for the painstaking zeal with which they have worked at the difficult task allotted to them.

I have, &c.,

H. BOENING,
Principal.

PART II

TABULAR STATEMENTS

FINANCIAL STATEMENTS

Showing Receipts and Expenditure of the various Boarding and Industrial Schools, for the year ended June 30, 1902.

FORT WILLIAM ORPHANAGE, ONT.

(Roman Catholic.)

Receipts.	$ cts.	$ cts.
Government grant		500 00
From other sources		1,259 85
Value of clothing contributed		50 00
Total receipts		1,809 85
Expenditure.		
Salaries	100 00	
Food	954 19	
Clothing	168 38	
Fuel and light	100 00	
Buildings and repairs	168 50	
Equipment and furniture	231 20	
Miscellaneous	309 39	
Total expenditure	2,031 66	
Excess of expenditure over receipts		221 81
	2,031 66	2,031 66

PINE CREEK BOARDING SCHOOL, MAN.

(Roman Catholic.)

Receipts.	$ cts.	$ cts.
Government grant		4,140 00
Expenditure.		
Salaries	500 00	
Food	2,420 00	
Clothing	852 00	
Fuel and light	190 00	
Buildings	300 00	
Miscellaneous	200 00	
Total expenditure	4,462 00	
Excess of expenditure over receipts		322 00
	4,462 00	4,462 00

STATEMENT of Receipts and Expenditure for the year ended June 30, 1902—*Con.*

PORTAGE LA PRAIRIE BOARDING SCHOOL, MAN.

(Presbyterian.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,392 20
Value of clothing contributed		400 00
Contributed for salaries		840 00
EXPENDITURE.		
Salaries	840 00	
Food	910 68	
Clothing	433 50	
Fuel and light	130 95	
Buildings and repairs	68 41	
Equipment and furniture	51 25	
Miscellaneous	197 41	
	$2,632 20	$2,632 20

RAT PORTAGE BOARDING SCHOOL, ONT.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		2,138 40
Value of clothing donated		183 05
Discount on bills		81 12
Total receipts		2,402 57
EXPENDITURE.		
Salaries	350 20	
Provisions	1,094 81	
Clothing	329 20	
Equipment	580 37	
Buildings and repairs	216 73	
Miscellaneous	150 00	
Total expenditure	2,721 31	
Excess of expenditure over receipts		318 74
	2,721 31	2,721 31

STATEMENT of Receipts and Expenditure for the year ended June 30, 1902—*Con.*

BIRTLE BOARDING SCHOOL, MAN.

(Presbyterian.)

RECEIPTS.	$ cts.	$ cts.
Balance on hand, June 30, 1901		143 40
Government grant		2,719 80
Clothing		825 00
Salaries		1,450 00
From other sources		108 00
Total receipts		5,246 20
EXPENDITURE.		
Salaries	1,450 00	
Clothing	893 86	
Fuel and light	497 57	
Buildings and repairs	202 40	
Equipment	47 40	
Food	1,031 24	
Miscellaneous	582 03	
Total expenditure	4,704 50	
Balance on hand, June 30, 1902	541 70	
	5,246 20	5,246 20

BLACKFOOT BOARDING SCHOOLS, N.W.T.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		2,713 20
From other sources		1,541 19
Value of clothing, &c., in bales		791 00
Total receipts		5,045 39
EXPENDITURE.		
Balance, July 1, 1901	362 78	
Salaries	1,445 20	
Food	1,264 61	
Furnishings	114 36	
Clothing	913 47	
Fuel and light	312 75	
Repairs	141 45	
Miscellaneous	809 03	
Total expenditure	5,363 65	
Excess of expenditure over receipts		318 26
	5,363 65	5,363 65

STATEMENT of Receipts and Expenditure for the year ended June 30, 1902—*Con.*

BLOOD BOARDING SCHOOL, N. W. T.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		3,485 40
From other sources		1,622 15
Value of clothing, &c., in bales		1,018 50
Total receipts		6,126 05
EXPENDITURE.		
Balance, July 1, 1901	417 99	
Salaries	1,858 00	
Food	1,831 63	
Furnishings	97 04	
Clothing	1,111 82	
Fuel and light	344 55	
Buildings and repairs	312 16	
Miscellaneous	513 66	
Total expenditure	6,486 85	
Excess of expenditure over receipts		360 80
	6,486 85	6,486 85

BLOOD BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,150 14
From other sources		250 00
Total receipts		1,400 14
EXPENDITURE.		
Salaries	1,100 00	
Food	750 00	
Clothing	150 00	
Fuel and light	300 00	
Equipment	250 00	
Repairs	60 00	
Miscellaneous	100 00	
Total expenditure	2,710 00	
Excess of expenditure over receipts		1,309 86
	2,710 00	2,710 00

STATEMENT of Receipts and Expenditure for the year ended June 30, 1902—*Con.*

BLUE QUILL'S BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		2,859 00
From other sources		310 00
Total receipts		3,169 00
EXPENDITURE.		
Salaries	362 87	
Food	1,640 35	
Clothing	268 87	
Fuel and light	236 77	
Furniture	116 88	
Miscellaneous	489 40	
Debt	500 00	
Total expenditure	3,615 14	
Excess of expenditure over receipts		446 14
	3,615 14	3,615 14

CROWFOOT BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,143 00
From other sources		1,685 00
Grant from the Government for hot-air furnace		400 00
Total receipts		3,228 00
EXPENDITURE.		
Salaries	950 00	
Food	870 00	
Clothing	490 00	
Fuel and light	250 00	
Water-supply	50 00	
Buildings and repairs	369 00	
Hot-air furnace	400 00	
Equipment and furniture	102 00	
Total expenditure	3,481 00	
Excess of expenditure over receipts		253 00
	3,481 00	3,481 00

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

CROWSTAND BOARDING SCHOOL, N.W.T.

(Presbyterian.)

RECEIPTS.	$ cts.	$ cts.
Balance on hand, June 30, 1901		3 87
Government per capita grant		2,726 40
Church grant		2,275 00
Contributed by way of clothing		800 00
Proceeds from sale of stock		268 50
Contributions from other sources		430 73
Total receipts		6,504 50
EXPENDITURE.		
Salaries	2,140 00	
Food	1,733 69	
Clothing	925 00	
Fuel and light	435 50	
Buildings and repairs	360 00	
Equipment and furniture	185 00	
Hay and oats	230 00	
Extra labour	135 00	
Miscellaneous	311 75	
Total expenditure	6,455 94	
Balance on hand, June 30, 1902	48 56	
	6,504 50	6,504 50

COWESSESS BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,819 10
From other sources		855 30
Total receipts		2,674 40
EXPENDITURE.		
Salaries	420 95	
Food	826 23	
Clothing	372 31	
Fuel and light	231 81	
Buildings and repairs	419 34	
Equipment and furniture	364 19	
Miscellaneous	583 63	
Total expenditure	3,218 46	
Excess of expenditure over receipts		544 06
	3,218 46	3,218 46

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

DUCK LAKE BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		9,850 81
Repairs		251 50
Inspector's board		2 00
Total receipts		10,104 31
EXPENDITURE.		
Salaries	2,721 75	
Food	2,777 19	
Clothing	242 95	
Fuel and light	795 07	
Buildings and repairs	2,492 00	
Farm and garden	2,009 29	
Miscellaneous	1,972 38	
Total expenditure	13,010 54	
Excess of expenditure over receipts		2,906 23
	13,010 54	13,010 54

EMMANUEL COLLEGE, N.W.T.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant		4,222 40
" for repairs		253 76
Grant from C. M. S.		840 00
Proceeds of sale of farm produce		304 18
Donations		189 45
Band earnings		69 70
Value of clothing contributed		380 00
Cash from divinity professorship fund of Emmanuel College		425 00
Cash from C. M. S. for salary		325 00
From other sources		40 00
Total receipts		7,049 49
EXPENDITURE.		
Deficit, June 30, 1901	1,771 15	
Clothing	993 42	
Provisions	1,663 80	
Salaries	1,849 30	
Fuel and light	426 68	
O. H. help	235 40	
Equipment	811 13	
Allowance to pupils	223 60	
Repairs	561 79	
Miscellaneous	698 79	
Total expenditure	9,235 06	
Excess of expenditure over receipts		2,185 57
	9,235 06	9,235 06

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

ERMINESKIN'S BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Balance on hand, June 30, 1901		8 56
Government grant		3,255 60
From other sources		180 00
Total receipts		3,444 16
EXPENDITURE.		
Salaries	950 00	
Food	1,750 61	
Clothing	556 99	
Fuel and light	125 00	
Total expenditure	3,382 60	
Balance on hand, June 30, 1902	61 56	
	3,444 16	3,444 16

FILE HILLS BOARDING SCHOOL, N.W.T.

(Presbyterian.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,049 30
From other sources		1,154 23
Value of clothing contributed		500 00
Total receipts		2,703 53
EXPENDITURE.		
Salaries	873 75	
Food, fuel and light	656 00	
Clothing	266 24	
Repairs	235 42	
Equipment and furniture	254 40	
Miscellaneous	397 34	
Total expenditure	2,683 15	
Balance on hand, June 30, 1902	20 38	
	2,703 53	2,703 53

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

GORDON'S BOARDING SCHOOL, N.W.T.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant		2,129 10
Diocesan grant		571 84
From England and the S.P.C.K		315 16
Value of clothing contributed		650 11
EXPENDITURE.		
Provisions	1,142 49	
Clothing	876 76	
Fuel and light	100 27	
Wages	865 00	
Repairs, equipment, &c	242 12	
Sundries	439 57	
	3,666 21	3,666 21

HOLY ANGELS BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		2,880 00
EXPENDITURE.		
Salaries	1,000 00	
Food	1,812 00	
Clothing	1,972 00	
Fuel and light	440 00	
Total expenditure	5,224 00	
Excess of expenditure over receipts		2,344 00
	5,224 00	5,224 00

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

LESSER SLAVE LAKE BOARDING SCHOOL, N.W.T.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		776 40
Grant from Northwest Territorial Government towards salaries		400 00
Grant from Women's Auxiliary toward salary of matron		130 00
Total receipts		1,306 40
EXPENDITURE.		
Salaries	530 00	
Other expenditure	1,200 00	
Total expenditure	1,730 00	
Excess of expenditure over receipts		423 60
	1,730 00	1,730 00

LESSER SLAVE LAKE BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		2,880 00
EXPENDITURE.		
Salaries	1,500 00	
Food	3,057 15	
Clothing	1,225 34	
Total expenditure	5,782 49	
Excess of expenditure over receipts		2,902 49
	5,782 49	5,782 49

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

MUSCOWEQUAN'S BOARDING SCHOOL, N.W.T.

(Roman Catholic).

RECEIPTS.	$ cts.	$ cts.
Government grant		2,160 00
From other sources		15 00
Total receipts		2,175 00
EXPENDITURE.		
Salaries	1,320 00	
Food	900 00	
Clothing	500 55	
Fuel and light	166 54	
Buildings and repairs	95 25	
Equipment	100 00	
Miscellaneous	158 85	
Total expenditure	3,241 19	
Excess of expenditure over receipts		1,066 19
	3,241 19	3,241 19

ONION LAKE BOARDING SCHOOL, N.W.T.

(Church of England).

RECEIPTS.	$ cts.	$ cts.
Government grant		1,095 80
Medical officer's salary		233 22
Territorial grant towards teacher's salary		205 85
Grant from Women's Auxiliary towards salary of staff		240 00
Value of clothing and bedding received from Women's Auxiliary		300 00
From other sources		1,966 33
EXPENDITURE.		
Salaries	590 00	
Food	1,559 80	
Buildings, repairs and finishing	719 40	
Fuel and light	200 00	
Clothing	314 00	
Equipment	658 00	
	4,041 20	4,041 20

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

ONION LAKE BOARDING SCHOOL, N.W.T.

(Roman Catholic).

RECEIPTS.	$ ct.	$ cts.
Government grant		3,291 00
From other sources		1,278 25
Total receipts		4,569 25
EXPENDITURE.		
Deficit, June 30, 1901	563 52	
Salaries	696 15	
Wages	275 50	
Food	2,175 24	
Clothing	535 35	
Fuel and light	155 00	
Equipment and furniture	591 46	
Miscellaneous	363 00	
Total expenditure	5,355 22	
Excess of expenditure over receipts		785 97
	5,355 22	5,355 22

PEIGAN BOARDING SCHOOL, N.W.T.

(Church of England).

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		1,498 80
From other sources		968 42
Value of clothing in bales		434 00
Total receipts		2,901 22
EXPENDITURE.		
Balance, July 1, 1901	175 06	
Salaries	834 00	
Food	1,327 98	
Furnishings	158 82	
Clothing	456 71	
Fuel and light	158 32	
Miscellaneous	236 75	
Total expenditure	3,347 64	
Excess of expenditure over receipts		446 42
	3,347 64	3,347 64

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

PEIGAN BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,409 95
From other sources		403 68
Total receipts		1,813 63
EXPENDITURE.		
Salaries	650 00	
Food	783 75	
Clothing	244 94	
Fuel and light	188 83	
Buildings and repairs	15 00	
Equipment	39 15	
Travelling expenses and freight charges	64 85	
Miscellaneous	74 30	
Total expenditure	2,060 82	
Excess of expenditure over receipts		247 19
	2,060 82	2,060 82

ROUND LAKE BOARDING SCHOOL, N.W.T.

(Presbyterian.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		1,760 80
Church grant		1,650 00
Received from W.F.M.S		400 00
EXPENDITURE.		
Salaries	1,650 00	
Food	1,000 00	
Clothing	600 00	
Miscellaneous	560 80	
	3,810 80	3,810 80

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

SARCEE BOARDING SCHOOL, N.W.T.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		885 60
" " special for repairs, &c		350 89
Received from other sources		861 30
Value of clothing, &c., in bales		252 00
Total receipts		2,349 79
EXPENDITURE.		
Balance, July 1, 1901	192 50	
Salaries	537 75	
Food	484 67	
Equipment and furnishings	69 19	
Clothing	261 30	
Fuel and light	207 50	
Buildings and repairs	446 29	
Miscellaneous	516 23	
Total expenditure	2,715 43	
Deficit, June 30, 1902		365 64
	2,715 43	2,715 43

ST. ALBERT BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		4,857 00
EXPENDITURE.		
Salaries—None paid		
Wages of farmers	720 00	
Wages of baker	240 00	
Food	1,156 00	
Clothing	459 65	
Fuel and light	73 39	
Buildings and repairs	621 00	
Miscellaneous	234 00	
Deficit, June 30, 1901	8,003 23	
Total expenditure	11,507 27	
Excess of expenditure over receipts		6,650 27
	11,507 27	11,507 27

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902.—*Con.*

THUNDERCHILD'S BOARDING SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		832 20
From other sources		425 00
Value of clothing contributed		50 00
Total receipts		1,307 20
EXPENDITURE.		
Salaries	400 00	
Food	825 00	
Clothing	275 00	
Fuel and light	85 00	
Buildings	635 00	
Total expenditure	2,220 00	
Excess of expenditure over receipts		912 80
	2,220 00	2,220 00

ALBERNI BOARDING SCHOOL, B.C.

(Presbyterian.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,800 00
Church grant		1,679 00
Clothing from W.F.M.S.		550 00
From other sources		55 00
Total receipts		4,084 00
EXPENDITURE.		
Salaries	1,399 00	
Food	1,150 91	
Clothing	632 50	
Fuel and light	99 80	
Buildings and repairs	196 28	
Stock	40 00	
Equipment and furniture	117 55	
Miscellaneous	394 24	
Total expenditure	4,030 28	
Balance on hand, June 30, 1902	53 72	
	4,084 00	4,084 00

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

CLAYOQUOT BOARDING SCHOOL, B.C.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		2,880 00
EXPENDITURE.		
Salaries	723 75	
Food	1,322 31	
Clothing	486 06	
Fuel and light	181 69	
Buildings and repairs	189 28	
Equipment and furniture	711 65	
Miscellaneous	246 79	
Total expenditure	3,861 53	
Excess of expenditure over receipts		981 53
	3,861 53	3,861 53

PORT SIMPSON GIRLS' HOME, B.C.

(Methodist.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,200 00
Women's Missionary Society grant		3,147 50
From other sources		90 45
EXPENDITURE.		
Deficit, June 30, 1901	82 74	
Salaries	1,487 50	
Food	1,240 41	
Clothing	320 12	
Fuel and light	397 50	
Buildings and repairs	317 51	
Equipment and furniture	136 54	
Miscellaneous	366 40	
Total expenditure	4,348 72	
Balance on hand, July 30, 1902	89 23	
	4,437 95	4,437 95

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

ST. MARY'S MISSION BOARDING SCHOOL, B.C.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Per capita grant		3,600 00
Proceeds of farm and garden		1,650 00
Grant from mission		1,332 95
From other sources		867 00
Total receipts		7,449 95
EXPENDITURE.		
Deficit, June 30, 1901	1,008 45	
Salaries	1,560 00	
Food	3,250 00	
Clothing	300 00	
Fuel and light	340 00	
Buildings and repairs	400 00	
Equipment and furniture	350 00	
Miscellaneous	450 00	
Total expenditure	7,658 45	
Excess of expenditure over receipts		208 50
	7,658 45	7,658 45

SQUAMISH BOARDING SCHOOL, B C.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		1,625 00
From the church		800 00
EXPENDITURE.		
Insurance	10 00	
Buildings	120 00	
Stationery, &c	50 00	
Food and clothing	1,663 00	
Garden seeds	20 00	
Boots and shoes	72 00	
Fuel and light	90 00	
Wages of farm instructor	400 00	
	2,425 00	2,425 00

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

YALE (ALL HALLOWS) BOARDING SCHOOL, B C.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Balance on hand, June 30, 1901		1,369 33
Government grant		1,446 50
Donations		136 45
Grant from S.P.C.K.		480 00
Proceeds from sale of fruit		20 00
EXPENDITURE.		
Repairs and improvements	210 52	
Salaries	340 00	
Cost of management	1,152 00	
Laundry	192 00	
Fuel and light	152 00	
Travelling expenses	10 00	
Medicines	20 60	
Furniture	7 00	
Stationery, &c	17 00	
Freight	74 78	
Boots and shoes	12 00	
Garden seeds, &c	20 00	
Total expenditure	2,207 90	
Balance on hand June 30, 1902	1,244 38	
	3,452 28	3,452 28

MOHAWK INSTITUTE, ONT.

(Undenominational.)

RECEIPTS.	$ cts.	$ cts.
Government grant		5,460 00
From industrial departments		4,784 91
Total receipts		10,244 91
EXPENDITURE.		
Salaries	3,073 04	
Provisions	3,414 40	
Clothing	1,341 68	
Washing, heating and lighting	763 07	
Repairs and insurance	543 08	
Furniture and equipment	407 50	
Office expenses	22 13	
Medical expenses	173 42	
Funeral "	12 00	
Sundries	357 77	
Materials for industrial departments	4,737 14	
Total expenditure	14,845 23	
Excess of expenditure over receipts		4,600 32
	14,845 23	14,845 23

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

MOUNT ELGIN INDUSTRIAL SCHOOL, ONT.

(Methodist.)

	$ cts.	$ cts.
Live stock, farming implements, furniture gr.owing crops &c., as per inventory, July 1, 1901		15,998 21
Salaries of principal, teachers, matron, cook, shoemaker	2,374 12	
Farm labour, $1,725.06; blacksmithing, $69.78	1,794 84	
Farm implements and repairs, $698.24; harness and repairs, $81.20	779 44	
Live stock purchased, $2,679.16; feed, $669.57	3,348 73	
Seed, $109.93; grain and grinding, $911.71	1,021 64	
Travelling expenses, $65.99; freight and express, $27.52	93 51	
Groceries and provisions, $1,606.63; coal and wood, $314.15	1,920 78	
Books, stationery and printing, $96.71; postage, $15.50	112 21	
Clothing and clothing material, boots and shoes	707 99	
Dry-goods, $342.71; hardware, $341.22	683 93	
Medical attendance, $79.50; drugs and medicine, $41.95	121 45	
Furnishings, $19.80; cleaning and painting, $45	64 80	
Pasture and rent of land, $1,367.51; lighting, $59.40	1,426 91	
Tile draining, $89; wire fencing, $97.36; lime and shingles, $30.48; cement, $136	352 84	
Swings, $14; incidentals, $83.40	97 40	
Shoe-shop material	43 35	
Carpenter-shop material	35 11	
		14,979 05
		30,977 26
Less by sale of live stock	7,706 07	
Present estimated value of live stock, farm implements, furniture, growing crops, &c., as per inventory June 30, 1902	17,185 00	
		24,891 07
Net expenditure		6,086 19
Government grant (per capita)		6,000 00
Deficit, June 30, 1902		86 19

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

SHINGWAUK HOME.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		3,961 00
" " for special purposes		5 00
Amount received from other sources in England and Canada		4,705 22
Total receipts		8,671 22
EXPENDITURE.		
Salaries	2,765 88	
Food	2,896 15	
Clothing, boots, &c	423 11	
Fuel and light	1,044 02	
Buildings and repairs	388 53	
Equipment and furniture (paid out of the school funds)	19 90	
Office expenses, insurance, &c	188 25	
Travelling expenses, children's amusements	102 26	
Hospital expenses and doctor	156 20	
Pocket money	75 57	
Laundry expenses	132 22	
Miscellaneous	81 75	
Total expenditure	8,273 84	
Deficit, July 1, 1901	1,084 26	
Loss on all trades, 1901–02	202 91	
Apparent gross deficit		889 79
	9,561 01	9,561 01
Gross deficit	889 79	
Partially covered by stock	143 14	
Actual cash deficit, June 30, 1902	746 65	
	889 79	889 79

WIKWEMIKONG INDUSTRIAL SCHOOLS.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		7,152 00
Receipts from industrial departments		2,055 00
" other sources		1,025 14
EXPENDITURE.		
Salaries	2,605 75	
Food	3,892 00	
Clothing	1,138 39	
Fuel and light	698 00	
Buildings and repairs	1,561 00	
Equipment and furniture	225 00	
Miscellaneous	112 00	
	10,232 14	10,232 14

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

BRANDON INDUSTRIAL SCHOOL, MAN.

(Methodist.)

RECEIPTS.	$ cts.	$ cts.
Balance on hand, June 30, 1901		0 56
Government grant		11,893 21
Missionary society		106 79
Proceeds from farm and sale of live stock		135 71
Discount on purchase		50 00
EXPENDITURE.		
Salaries	4,372 00	
Provisions	2,879 28	
Clothing	2,031 40	
Fuel	988 10	
House and carpenter-shop equipment	904 40	
Lighting and light equipment	269 37	
Farm equipment	258 74	
Transport of pupils	183 25	
Travelling	57 75	
Repairs	53 30	
Telephone	50 00	
Games	43 39	
Office expenses	36 65	
Freight	35 58	
Extra labour	15 75	
Telegrams	7 13	
Total expenditure	12,186 09	
Balance on hand, June 30, 1902	0 18	
	12,186 27	12,186 27

ELKHORN INDUSTRIAL SCHOOL, MAN.

(Undenominational.)

RECEIPTS.	$ cts.	$ cts.
Government grant		19,680 78
Sundry receipts		1,426 55
EXPENDITURE.		
Salaries	4,323 50	
Stock and equipment	1,077 56	
Material and repairs	643 70	
Dry-goods and clothing	2,387 62	
Groceries and provisions	4,600 79	
Fuel and light	1,746 69	
Miscellaneous	765 23	
Travelling expenses	217 90	
Buildings and fixtures	4,812 29	
Indian Department (sundry receipts)	532 05	
	21,107 33	21,107 33

NOTE.—All expenses in connection with this school are paid by the government.

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

RUPERTS LAND INDUSTRIAL SCHOOL, MAN.

(Undenominational.)

EXPENDITURE.	$ cts.	$ cts.
Salaries	5,425 90	
Food	5,852 54	
Clothing	2,827 28	
Furnishing	692 55	
Management	5,744 81	
Buildings	5,793 40	
Total expenditure		26,336 48

NOTE.—All expenses in connection with this school are paid by the government.

ST. BONIFACE INDUSTRIAL SCHOOL.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		9,257 61
Grant for repairs and equipment		1,055 09
Proceeds from farm and carpenter-shop		286 68
Total receipts		10,599 38
EXPENDITURE.		
Deficit, June 30, 1901	536 61	
Provisions	2,605 34	
Clothing	1,459 52	
Fuel and light	782 52	
Furniture and equipment	1,414 55	
Salaries	2,725 85	
Miscellaneous	1,654 62	
Total expenditure	11,179 01	
Excess of expenditure over receipts		579 63
	11,179 01	11,179 01

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

BATTLEFORD INDUSTRIAL SCHOOL, N.W.T.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		13,534 41
" " for buildings, repairs, &c		1,633 83
Contributions from other sources		1,495 20
Total receipts		16,663 44
EXPENDITURE.		
Blacksmith-shop	99 65	
Carpenter-shop	24 12	
Farm and garden	952 53	
Live stock	218 00	
Bed-room and dormitory equipment	457 43	
Clothing	1,926 96	
Dining table furnishings	46 97	
Dispensary	873 58	
Entertainment and games	73 65	
Express and freight	347 59	
Extra labour	213 59	
Fuel and heating	1,819 30	
House equipment	100 73	
" general expenses	234 36	
Light	207 95	
Miscellaneous	66 90	
Provisions	3,397 65	
Repairs	1,692 35	
Salaries	4,038 25	
School material	25 93	
Telegrams, transport of pupils, &c	60 70	
Total expenditure	16,878 19	
Excess of expenditure over receipts		214 75
	16,878 19	16,878 19

CALGARY INDUSTRIAL SCHOOL, N.W.T.

(Undenominational.)

EXPENDITURE.	$ cts.	$ cts.
Salaries	2,763 37	
Food	2,530 41	
Clothing	958 70	
Furnishing	201 28	
Management	1,615 87	
Buildings	119 69	
Total expenditure		8,189 32

NOTE.—All expenses in connection with this school are paid by the government.

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

QU'APPELLE INDUSTRIAL SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant per capita, balance 1900-1901		1,243 85
" " year 1901-1902		24,245 26
" above per capita for buildings, medical attendance, equipment, repairs and postage		4,501 87
Amount earned by shops		2,108 85
" overdrawn at bank		188 20
Total receipts		32,288 03

EXPENDITURE.			
Salaries—			
Out of per capita grant	$7,886 00		
Above "	600 00		
		8,486 00	
Provisions		7,476 40	
Clothing		3,235 14	
Fuel and light		2,146 52	
Buildings and repairs—			
Out of per capita grant	$ 926 05		
Above "	1,175 17		
		2,101 22	
Equipment—			
Out of per capita grant	$ 910 69		
Above "	2,392 70		
		3,303 39	
Miscellaneous—			
Out of per capita grant	$4,626 71		
Above "	334 00		
		4,960 71	
Unpaid accounts, 1900-1901		2,293 19	
Total expenditure		34,002 57	
Per capita grant due, 1901-1902			1,216 38
Deficit, June 30, 1902			498 16
		34,002 57	34,002 57

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

RED DEER INDUSTRIAL SCHOOL, N.W.T.

(Methodist.)

RECEIPTS.	$ cts.	$ cts.
Cash on hand, July 1, 1901		7 30
Methodist Missionary Society		8,100 00
Indian department, earnings	502 25	
" for repairs, &c.	1,661 72	
		2,163 97
Sundry sales, farm, &c.	488 74	
" live stock	690 83	
		1,179 57
Unpaid accounts		609 69
EXPENDITURE.		
Clothing	1,587 22	
Drugs	121 26	
Engine-house	10 00	
Fuel	194 15	
Games	35 30	
House equipment	176 31	
House expense	175 16	
Light	72 03	
Special medical (small-pox)	443 05	
Provisions	2,305 54	
Repairs and new buildings	1,089 24	
Salaries	3,630 64	
Travelling expenses	320 75	
Carpenter's shop equipment	13 70	
Farm equipment	239 92	
" live stock	420 00	
" running account	817 03	
Office expense	60 09	
Missellaneous	321 82	
Cash on hand, June 30, 1902	27 32	
	12,060 53	12,060 53

REGINA INDUSTRIAL SCHOOL, N.W.T.

(Presbyterian.)

RECEIPTS.	$ cts.	$ cts.
Balance on hand, June 30, 1901		54 35
Government grant		9,845 23
Transport of pupils paid by department		742 32
Freight on clothing " "		146 43
Proceeds of sale of farm produce		1,346 71
Grant for buildings and repairs		800 00
From all other sources		1,692 81
EXPENDITURE.		
Salaries	3,407 93	
Food	3,926 99	
Clothing	1,003 77	
Fuel and light	1,608 84	
Equipment and furniture	309 13	
Buildings and repairs	800 00	
Transport of pupils	742 32	
Freight on clothing	146 43	
Miscellaneous	2,606 36	
	14,551 77	
Balance on hand, June 30, 1902	76 08	
	14,627 85	14,627 85

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

HIGH RIVER INDUSTRIAL SCHOOL, N.W.T.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant (per capita)		9,183 38
" " for repairs, &c		600 00
Loan to meet deficit 1900 1901		1,000 00
Farm produce sold		1,719 85
Miscellaneous		223 77
Total receipts		12,727 00
EXPENDITURE.		
Salaries	4,744 30	
Food	3,102 82	
Clothing	1,601 79	
Fuel and light	745 47	
Buildings and repairs	602 75	
Equipment and furniture	320 70	
Refund on loan	150 00	
Miscellaneous	1,094 93	
New goods purchased	1,835 37	
Total expenditure	14,198 13	
Excess of expenditure over receipts		1,471 13
	14,198 13	14,198 13

ALERT BAY INDUSTRIAL SCHOOL, B.C.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant		3,543 51
Received from Church Missionary Society		463 20
" " other sources		48 20
Receipts from carpenter-shop		126 75
Total receipts		4,181 66
EXPENDITURE.		
Salaries	1,202 00	
Food	1,180 25	
Clothing	632 15	
Fuel and light	140 25	
Equipment	198 25	
Repairs and furniture	110 75	
Band and music	199 75	
Miscellaneous	178 35	
Deficit, July 1, 1901	114 01	
Total expenditure	3,955 76	
Balance on hand, June 30, 1902	225 90	
	4,181 66	4,181 66

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

COQUALEETZA INDUSTRIAL SCHOOL, B.C.

(Methodist.)

RECEIPTS.	$ cts.	$ cts.
Government grant		8,900 60
Proceeds from farm and trade shops		1,811 97
Total receipts		10,712 57
EXPENDITURE.		
Salaries	3,441 30	
Food	2,738 56	
Clothing	1,099 08	
Fuel and light	387 59	
Buildings and repairs	1,022 53	
Equipment and furniture	1,645 67	
Miscellaneous	440 87	
Total expenditure	10,775 60	
Excess of expenditure over receipts		63 03
	10,775 60	10,775 60

KAMLOOPS INDUSTRIAL SCHOOL, B.C.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Balance on hand, July 1, 1901		28 82
Government grant		6,491 30
Receipts from farm and shoe-shop		5 90
Total receipts		6,526 02
EXPENDITURE.		
Salaries	2,790 00	
Food	1,576 20	
Clothing	746 88	
Fuel and light	146 95	
Buildings and repairs	109 60	
Equipment and furniture	554 26	
Miscellaneous	572 28	
Total expenditure	6,496 17	
Balance on hand, June 30, 1902	29 85	
	6,526 02	6,526 02

STATEMENT of Receipts and Expenditure for the Year ended June 30, 1902—*Con.*

KOOTENAY INDUSTRIAL SCHOOL, B.C.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		6,500 00
From farm produce		300 00
Total receipts		6,800 00
EXPENDITURE.		
Salaries	1,160 00	
Food	3,000 00	
Clothing	1,345 00	
Fuel and light	225 00	
Buildings and repairs	1,000 00	
Miscellaneous	600 00	
Total expenditure	7,330 00	
Excess of expenditure over receipts		530 00
	7,330 00	7,330 00

KUPER ISLAND INDUSTRIAL SCHOOL, B.C.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		6,500 00
From other sources		236 52
Total receipts		6,736 52
EXPENDITURE.		
Salaries	2,750 00	
Food	1,928 84	
Clothing	1,058 18	
Fuel and light	82 25	
Buildings and repairs	512 83	
Equipment and furniture	326 67	
Miscellaneous	327 99	
Deficit, June 30, 1901	111 83	
Total expenditure	7,098 59	
Excess of expenditure over receipts		362 07
	7,098 59	7,098 59

STATEMENT of Receipts e for the Year ended June 30, 1902—*Con.*

METLAKAHTLA INDUSTRIAL SCHOOL, B.C.

(Church of England.)

RECEIPTS.	$ cts.	$ cts.
Government grant		3,638 76
Proceeds of work done by pupils		62 25
Board of Dr. Wilson and others		27 00
Insurance		208 00
Eggs and meat sold		24 75
Government grant towards new buildings		505 96
" " for tools and equipment		270 80
Total receipts		4,737 52
EXPENDITURE.		
Deficit, June 30, 1901	357 41	
Salaries	1,394 00	
Extra labour	221 75	
Food	1,494 30	
Clothing	713 73	
Fuel and light	298 10	
Buildings and repairs	541 46	
Equipment and furniture	337 43	
Miscellaneous	140 49	
Total expenditure	5,498 67	
Excess of expenditure over receipts		761 15
	5,498 67	5,498 67

WILLIAMS LAKE INDUSTRIAL SCHOOL, B.C.

(Roman Catholic.)

RECEIPTS.	$ cts.	$ cts.
Government grant		5,430 72
From other sources		2,336 87
Value of clothing contributed		20 00
Total receipts		7,787 59
EXPENDITURE.		
Deficit, June 30, 1901	4,269 72	
Interest	150 00	
Salaries	2,852 46	
Food	2,785 00	
Clothing	450 00	
Buildings and repairs	20 00	
Equipment and furniture	223 65	
Miscellaneous	104 33	
Total expenditure	10,855 16	
Excess of expenditure over receipts		3,067 57
	10,855 16	10,855 16

SCHOOL

STATEMENT of Day Schools in the Dominion (from which Returns

School.	Reserve.	Agency.	Teacher.	Denomination.
ONTARIO.				
Alnwick	Alnwick	Alnwick	C. B. Oakley	Methodist
Back Settlement	Caradoc	Caradoc	Miss Bessie Ward	Undenominational
Bear Creek	"	"	" Martha Nicholls	"
Buzwah	Manitoulin Island	Manitowaning	J. Koehmstedt	Roman Catholic
Cape Croker	Cape Croker	Cape Croker	Miss J. L. Govenlock	Undenominational
Christian Island	Christian Island	Penetanguishene	Rev. W. Geo. Evans	Methodist
Fort William (boys)	Fort William	Western	Sister M. Ambrose	Roman Catholic
" (girls)	"	"	"	"
French Bay	Saugeen	Saugeen	T. J. Wallace	Undenominational
Garden River (R.C.)	Garden River	Sault St. Marie	Rev. H. Caron, S.J.	Roman Catholic
" (C.E.)	"	"	Miss Ethel M. Frost	Church of England
Georgina Island	Georgina Island	Rama	Hugh L. Tweed	Methodist
*Gibson	Watha	Parry Sound	Thos. Whitebeans	"
Golden Lake	Golden Lake	Golden Lake	Miss Lucinda Casey	Roman Catholic
Henvey Inlet	Henvey Inlet	Parry Sound	" Adda McIntosh	Undenominational
†Hiawatha	Rice Lake	Alnwick	Matthew E. Sutton	"
Kettle Point	Kettle Point	Sarnia	Miss Ethel E. Jacobs	"
Lake Helen	Red Rock	Western	Mrs. J. H. McKay	Roman Catholic
Mattawa	At Mattawa		Sister St. Gregory	"
Michipicoten	Michipicoten	Sault St. Marie	Miss Katie O'Connor	"
†Missinabie		"	" E. A. Conroy	Undenominational
Missassagi River	Manitonlin Island	Thessalon	" Lizzie Markle	Roman Catholic
Moraviantown	Moravian	Moravian	" Tena M. Gosnell	Undenominational
‡Mud Lake	Mud Lake	Rice Lake	Alfred McCue	"
Muncey	Caradoc	Caradoc	John Case	Church of England
‡Naughton	Whitefish Lake	Manitowaning	J. A. Windsor	Methodist
New Credit	New Credit	New Credit	Miss Mary G. Bogle	Undenominational
Nipissing	Nipissing	Parry Sound	" M. P. Brennan	"
Oneida No. 2	Oneida	Oneida	Levi Doxtator	Church of England
" No. 3	"	"	Miss C. A. Vollick	Methodist
Pic River	Pic River	Western	Moses Madwayosh	Roman Catholic
Port Elgin	Cape Croker	Cape Croker	Raym'd F. Chapman	Undenominational
Rama	Rama	Rama	Rev. John Lawrence	Methodist
River Settlement	Caradoc	Caradoc	Joseph Fisher	Undenominational
Ryerson	Parry Island	Parry Sound	D. A. Ferguson	"
Sagamook	Spanish River	Thessalon	Eliz. A. Lensch	Roman Catholic
Saugeen	Saugeen	Saugeen	Miss M. Vallentyne	Undenominational
Scotch Settlement	"	"	John Burr	"
§Serpent River	Serpent River	Thessalon	Adl. D'Lamorandiere	Roman Catholic
Shawanaga	Shawanaga	Parry Sound	Miss Nellie Holton	Undenominational
Sheguiandah	Sheguiandah	Manitowaning	Mrs. Benj. Fuller	Church of England
Sidney Bay	Cape Croker	Cape Croker	Miss A. D. Carson	Undenominational
Six Nations, No. 1	Six Nations	Six Nations	Peter Hunks	"
" No. 2	"	"	John Clark	"
" No. 3	"	"	Ai. Abbott	"
" No. 5	"	"	John Lickers	"
" No. 6	"	"	Elam D. Bearfoot	"
" No. 7	"	"	Miss Agnes Barber	"
" No. 9	"	"	" Beatrice Russell	"
" No. 10	"	"	" Sara Davis	"
" No. 11	"	"	T. W. Draper	"
Skene	Parry Island	Parry Sound	Miss J. E. Armour	"

*School closed from December, 1900, till October, 1901, for want of a teacher. †Indian children
‡No return received for the September quarter.

STATEMENT.

have been received) for the Year ended June 30, 1902.

Appropriation for Salary or yearly grant.	From what Fund Paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls.	Total.		I	II	III	IV	V	VI	
$ cts.												
300 00	Band	18	16	34	17	13	7	9	2	3		Alnwick.
250 00	"	13	4	17	6	9	3	1	2	2		Back Settlement.
200 00	"	17	6	23	7	19	3		1			Bear Creek.
300 00	Vote	10	3	13	6	6	5	1	1			Buzwah.
300 00	Band	13	8	21	7	12	3	5		1		Cape Croker.
300 00	"	14	15	29	11	18	7	2	1	1		Christian Island
550 00	Vote	17		17	10	7	3	5	2			Fort William (boys).
			19	19	9	11	5	3				" (girls.)
300 00	Band	8	14	22	16	9	7	3	2	1		French Bay.
500 00	Vote $200; Band $300.	28	39	67	37	31	14	11	6	5		Garden River (R.C.)
300 00	Band	17	24	41	14	14	4	14	5	4		" (C.E.)
300 00	Vote $150; Band $150.	13	6	19	7	2	7	6	4			Georgina Island.
300 00	Vote	21	21	42	19	15	10	1	13	3		Gibson.
300 00	"	10	8	18	11	6	7	3	2			Golden Lake.
250 00	Vote $150; Band $100.	5	15	20	12	1	4	14	1			Henvey Inlet.
100 00	Band	3	3	6	4	2	3	1				Hiawatha.
250 00	"	7	13	20	7	12	3	3	2			Kettle Point.
250 00	Vote	9	12	21	8	10	9	1	1			Lake Helen.
100 00	"	14	15	29	21	13	13	1	2			Mattawa.
300 00	"	12	8	20	11	12	4	4				Michipicoten.
		12	8	20	6	18	2					Missanabie.
250 00	Vote	10	8	18	5	13	4	1				Mississagi River.
300 00	Band	27	18	45	21	10	15	13	4	3		Moraviantown.
200 00	"	24	15	39	20	15	4	9	8	3		Mud Lake.
200 00	Vote	12	6	18	8	4	5	6	2	1		Muncey.
300 00	"	3	3	6	4	3	1	1	1			Naughton.
300 00	Band	17	14	31	17	14	4	6	3	2	2	New Credit.
250 00	"	14	11	25	12	14	5	2	3	1		Nipissing.
150 00	Vote	16	13	29	18	11	11	7				Oneida No. 2.
300 00	"	19	17	36	17	16	12	4	4			" No. 3.
250 00	"	11	6	17	6	6	3	6	2			Pic River.
300 00	Band	18	8	26	8	16	5	5				Port Elgin.
300 00	Vote $175; Band $125.	22	26	48	23	27	8	8	5			Rama.
200 00	Band	20	13	33	16	15	8	4	5	1		River Settlement.
250 00	"	22	13	35	12	22	10		2	1		Ryerson.
250 00	Vote	19	13	32	20	25	5	2				Sagamook.
300 00	Band	18	11	29	18	12	11	4	1	1		Saugeen.
300 00	"	13	13	26	20	5	7	6	5	3		Scotch Settlement.
250 00	Vote	5	6	11	5	10	1					Serpent River.
250 00	Vote $150; Band $100.	19	10	29	10	19	8	1	1			Shawanaga.
300 00	Band	12	9	21	7	9	8	4				Sheguiandah.
300 00	"	13	12	25	10	4	13	4	4			Sidney Bay.
		24	15	39	19	15	12	4	5	1	2	Six Nations, No. 1.
		27	35	62	35	23	9	9	10	2	9	" No. 2.
		33	21	54	24	26	12	10	3	3		" No. 3.
		31	17	48	26	10	13	11	4	6	4	" No. 5.
2950 00	Vote $450; Band $2,500	15	20	35	17	20	8	4	2	1		" No. 6.
		42	39	81	25	52	16	6	4	2	1	" No. 7.
		13	20	33	17	13	6	2	4	6	2	" No. 9.
		33	33	66	26	31	18	9	5	3		" No. 10.
		17	24	41	18	23	12	2	4			" No 11
200 00	Band	7	7	14	5	4	3	5	2			Skene.

attend white school. Fees paid by Department.

STATEMENT of Day Schools in the Dominion (from which Returns

School.	Reserve.	Agency.	Teacher.	Denomination.
ONTARIO—*Concluded.*				
South Bay	South Bay	Manitowaning	Miss Zoé St. James	Roman Catholic
Spanish River	Spanish River	Thessalon	" Carrie Morley	Church of England
St. Clair	Sarnia	Sarnia	" A.M. Matthews	Methodist
Sucker Creek	Sucker Creek	Manitowaning	E. R. Allman	Church of England
Thessalon	Thessalon River	Thessalon	Georgina E. Daigle	Roman Catholic
Thomas	Six Nations	Six Nations	John Miller	Undenominational
Tyendinaga (Eastern)	Tyendinaga	Tyendinaga	Miss Violet Smith	"
" (Western)	"	"	Alex. Leween	"
" (Central)	"	"	Miss G. Morden	"
" (Mission)	"	"	" Ethel M. Goode	"
Walpole Island, No. 1	Walpole Island	Walpole Island	Albert Sabjug	Church of England
" No. 2	"	"	A. Miskokomon	Methodist
" No. 3	"	"	Joseph Sampson	Undenominational
West Bay	West Bay	Gore Bay	Miss H. Eagan	Roman Catholic
Whitefish Lake	Whitefish Lake	Manitowaning	Mrs. Harriet King	"
Whitefish River	Whitefish River	"	S. H. Ferris	Church of England
Wikwemikong (boys)	Manitoulin Island unceded	"	Albert A. Capps	Roman Catholic
" (girls)	" "	"	Miss Louise Bonnot	"
Wikwemikongsing	Wikwemikongsing	"	Eugene Dontenville	"
Total, Ontario				
QUEBEC.				
*Becancour	Becancour	Becancour	Aglaë Houle	Roman Catholic
Bersimis	Bersimis	Bersimis	Sr. Mariel'Assompt'n	"
Caughnawaga (boys)	Caughnawaga	Caughnawaga	Peter J. DeLisle	"
" (girls)	"	"	Miss Lucie Street	"
" (mission)	"	"	Rev. J. J. Oke	Methodist
Cornwall Island	St. Regis	St. Regis	W. J. Bishop	Undenominational
Lorette	Lorette	Lorette	Sister St. Naziare	Roman Catholic
Maniwaki	Maniwaki	Maniwaki	Miss Annie O'Connor	"
Maria	Maria	Maria	Miss Mary Eva Hall	"
Oka (country)	Oka	Oka	Miss P. Henderson	Methodist
" (village)	"	"	Miss E. MacWilliams	"
Pointe Bleue	Pointe Bleue	Pointe Bleue	Mrs. O. P. Dufresne	Roman Catholic
Restigouche	Restigouche	Restigouche	Miss Mary Isaac	"
St. Francis (Prot)	St. Francis	Pierreville	Rev. H. O. Loiselle	Church of England
" (R.C.)	"	"	Sr. Mary Josephine	Roman Catholic
St. Regis	St. Regis	St. Regis	Miss Ethel Sims	Undenominational
Temiscaming	Temiscaming	Temiscaming	James McCarragher	Roman Catholic
Total, Quebec				

*Indian children attend white school. Fees paid by Department.

SESSIONAL PAPER No. 27

STATEMENT—*Continued.*

have been received) for the Year ended June 30, 1902.

Appropriation for Salary or yearly grant.	From what Fund paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls.	Total.		I	II	III	IV	V	VI	
$ cts.												Ontario—*Concluded.*
200 00	Band	18	18	36	22	25	6	2	3	....	..	South Bay.
200 00	Vote	6	4	10	4	7	3	....	..	....	....	Spanish River.
300 00	Band	18	22	40	17	22	8	2	7	1	....	St. Clair.
225 00	Vote	8	6	14	8	11	....	1	2	....	....	Sucker Creek.
250 00	"	9	4	13	6	5	6	2	....	....	....	Thessalon.
362 50	Band	27	21	48	28	16	7	11	4	10	....	Thomas.
125 00	"	44	28	72	33	37	15	15	5	....	....	Tyendinaga (Eastern).
225 00	"	20	10	30	13	18	9	1	1	1	....	" (Western).
130 00	"	19	21	40	24	24	5	3	7	1	....	" (Central).
225 00	"	33	19	52	31	29	15	7	....	1	....	" (Mission).
200 00	"	27	19	46	16	27	5	10	4	....	....	Walpole Island, No. 1.
300 00	Vote	22	12	34	19	17	4	10	2	1	....	" No. 2.
300 00	Band	17	11	28	9	15	3	7	3	..	....	" No. 3
250 00	"	19	27	46	26	35	4	6	1	....	....	West Bay.
250 00	"	10	9	19	11	9	6	4	....	....	....	Whitefish Lake.
250 00	Vote	4	4	8	5	4	1	3	..	....	....	Whitefish River.
300 00	"	43	....	43	10	32	8	2	1	....	....	Wikwemikong (boys).
300 00	"	....	20	20	12	13	4	2	1	....	....	" (girls).
200 00	"	16	5	21	12	7	8	4	2	....	....	Wikwemikongsing.
.....	.....	1197	993	2190	1041	1080	497	335	183	75	20	Total, Ontario.
												Quebec.
40 00	Vote	2	....	2	1	1	1	....	....	....	....	Becancour.
300 00	"	20	34	54	29	21	18	12	....	....	....	Bersimis.
450 00	"	126	....	126	40	104	8	9	5	..	....	Caughnawaga (boys.)
500 00	"	....	88	88	43	50	31	7	....	....	....	" (girls.)
125 00	"	10	10	20	7	17	3	....	....	..	....	" (mission.)
350 00	Band	25	11	36	14	22	7	4	3	....	....	Cornwall Island.
300 00	Vote	33	28	61	38	25	15	21	....	....	....	Lorette.
300 00	Band	20	32	52	16	22	18	8	4	..	....	Maniwaki.
150 00	Vote	14	8	22	9	8	7	1	6	....	....	Maria.
100 00	"	12	11	23	10	12	5	2	4	....	....	Oka (country.)
125 00	"	12	10	22	12	13	3	3	2	1	....	" (village.)
150 00	"	22	21	43	24	1	4	5	9	13	11	Pointe Bleue.
200 00	"	17	27	44	24	33	7	2	....	....	2	Restigouche.
250 00	"	9	7	16	10	2	3	7	1	2	1	St. Francis (Prot.)
290 00	"	42	22	64	51	28	17	11	5	3	..	" (R.C.)
350 00	Band	27	22	49	20	24	13	12	....	....	....	St. Regis.
300 00	Vote	32	28	60	21	18	22	11	5	1	3	Temiscaming.
.....	.....	423	359	782	369	404	182	115	44	20	17	Total, Quebec.

SCHOOL

STATEMENT of Day Schools in the Dominion (from which Returns

School.	Reserve.	Agency.	Teacher.	Denomination.
NOVA SCOTIA.				
Bear River	Bear River	Digby County	John L. DeVaney	Roman Catholic
Eskasoni	Eskasoni	Cape Breton Co.	Charles Bernard	"
*Half-way River	Franklin Manor	Cumberl'd County.	Miss A. M. Rutherford	"
Indian Cove	Fisher's Grant	Pictou "	Miss Nelly Connolly.	"
Middle River	Middle River	Victoria "	Alex. McDougall	"
†Millbrook	Millbrook	Colchester "	Miss Jessie Scott	"
New Germany	Lunenburg	Lunenburg "	Miss Minnie A. Shea	"
Salmon River	Salmon River	Richmond "	John Langley	"
Shubenacadie	Indian Brook	Hants "	Robert J. Logan	"
Whycocomagh	Whycocomagh	Inverness "	P. A. Murphy	"
Total, Nova Scotia				
NEW BRUNSWICK.				
Burnt Church	Church Point	Northeastern	Miss Bessie A. Dalton	Roman Catholic
Big Cove	Big Cove	"	Miss M. Natalie Babin	"
Eel Ground	Eel Ground	"	Miss Lucy B. Walsh	"
Kingsclear	Kingsclear	Western	Miss M. C. Monaghan	"
St. Mary's	St. Mary's	"	Miss M. J. Rush	"
Tobique	Tobique	"	Miss P. M. Goodine	"
Total, New Brunswick				
PRINCE EDWARD ISLAND.				
Lennox Island	Lennox Island	P.E.I. Sup'c'y.	John F. Arsenault	Roman Catholic
BRITISH COLUMBIA.				
Ahousaht	Ahousaht	West Coast.	John W. Russell	Presbyterian
Aiyansh	Kitladamicks	Northwest Coast.	Rev. J. B. McCullagh	Church of England
Alert Bay	Nimkish	Kwawkewlth	Mrs. Elizabeth Hall.	"
Bella Bella	Bella Bella	"	Mary A. Beatty	Methodist
Cape Mudge	Cape Mudge	"	Rev. R. J. Walker	"
Clayoquot	Opitsat	West Coast.	" P. C. Moser	Roman Catholic
‡Comox	Comox.	Cowichan	S. F. Crawford	Presbyterian
§Gitwingak.	Kitwingar.	Babine.	Rev. Alfred E. Price	Church of England
Gwayasdums	Gwayasdums	Kwawkewlth.	E. A. Bird	"
Kincolith	Kincolith	Northwest Coast.	Rev. W. H. Collison	"
Kita-maat	Kita-maat	"	Miss N. Markland	Methodist
Kitkahtla	Kitkahtla.	"	Rev. R. W. Gurd	Church of England
*Kishtiax	Kishtiax	Babine.	" W. H. Pierce	Methodist
Kyaquot	Kyaquot.	West Coast.	" E. Sobey	Roman Catholic
Massett.	Massett	Northwest Coast.	" W. E. Collison.	Church of England
Metlakahtla	At Metlakahtla	"	Miss A. J. Edwards.	"
Nanaimo	Nanaimo	Cowichan	Mrs. E. Nicholas	Methodist
*Nitanit	Cla-oose	West Coast	Rev. Wm. J. Stone.	"
Port Essington	Skeena	Northwest Coast.	Miss Kate Tranter	"
Port Simpson	At Port Simpson.	"	Chas. M. Richards.	"
Quamichan	Quamichan	Cowichan	Geo. C. VanGoethem	Roman Catholic

*Indian children attend white school. Fees paid by Department.
†School closed during September quarter, 1901.
‡ Only one return received. No government grant paid this school

SESSIONAL PAPER No. 27

STATEMENT—*Continued.*

have been received) for the Year ended June 30, 1902.

Appropriation for Salary or yearly grant.	From what Fund paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls.	Total.		I	II	III	IV	V	VI	
$ cts.												Nova Scotia.
300 00	Vote	9	8	17	9	9	2	4	1	1	....	Bear River.
200 00	"	20	6	26	8	13	5	2	3	2	1	Eskasoni.
100 00	"	2	4	6	3	3	3	....	....	....	....	Half-way River.
300 00	"	12	9	21	14	5	4	5	3	4	....	Indian Cove.
200 00	"	14	11	25	8	15	4	3	1	2	....	Middle River.
250 00	"	15	13	28	18	6	1	12	4	5	....	Millbrook.
300 00	"	1	7	11	6	2	2	....	2	1	4	New Germany.
250 00	"	16	9	25	5	17	3	2	2	....	1	Salmon River.
300 00	"	12	8	20	3	9	3	5	1	....	2	Shubenacadie.
200 00	"	21	18	39	15	30	2	7	....	....	....	Whycocomagh.
....	....	125	93	218	89	109	29	40	17	15	8	Total, Nova Scotia.
												New Brunswick.
250 00	Vote	16	9	25	8	16	4	2	1	1	1	Burnt Church.
250 00	"	15	11	26	8	15	1	5	5	....	....	Big Cove.
250 00	"	6	9	15	9	6	5	....	2	....	2	Eel Ground.
250 00	"	12	8	20	12	8	....	6	1	1	4	Kingsclear.
250 00	"	11	9	20	13	9	5	4	....	2	....	St. Mary's.
240 00	Vote, $150; Band, $90.	12	25	37	19	21	4	5	4	3	....	Tobique.
....	....	72	71	143	69	75	19	22	13	7	7	Total, New Brunswick.
												Prince Edward Island.
300 00	Vote	11	15	26	12	11	8	5	1	....	1	Lennox Island.
												British Columbia.
300 00	Vote	24	20	44	19	28	8	8	....	....	....	Ahousaht.
300 00	"	17	5	22	20	13	2	3	4	....	....	Aiyansh.
300 00	"	9	17	26	10	10	8	5	2	....	1	Alert Bay.
300 00	"	26	24	50	26	37	4	8	1	....	....	Bella Bella.
300 00	"	8	3	11	3	9	2	....	....	....	....	Cape Mudge.
300 00	"	11	5	16	4	10	4	2	....	....	....	Clayoquot.
....	....	5	2	7	3	2	2	3	....	....	....	Comox.
300 00	Vote	7	17	24	16	15	6	3	....	....	....	Gitwingak.
300 00	"	17	9	26	8	17	7	2	....	....	....	Gwayasdums.
300 00	"	18	31	49	29	15	10	12	12	....	....	Kincolith.
300 00	"	35	32	67	33	34	15	3	15	....	....	Kita-maat.
300 00	"	19	18	37	26	10	14	7	6	....	....	Kitkahtla.
300 00	"	12	14	26	16	22	3	1	....	....	....	Kishfiax.
300 00	"	12	4	16	6	12	4	....	....	....	....	Kyaquot.
300 00	"	27	37	64	30	36	15	12	1	....	....	Massett.
300 00	"	20	30	50	24	23	9	8	7	3	....	Metlakahtla.
300 00	"	6	14	20	10	7	8	2	3	....	....	Nanaimo.
300 00	"	6	14	20	11	15	3	....	2	....	....	Nitanit.
300 00	"	25	26	51	19	32	11	7	1	....	....	Port Essington.
400 00	"	53	14	67	37	24	19	16	8	....	....	Port Simpson.
300 00	"	17	....	17	14	11	5	1	....	....	....	Quamichan.

§ School did not re-open till October 7, 1901, as new building was not completed.
|| Only one return received.
* No return received for September quarter, 1901.

SCHOOL

STATEMENT of Day Schools in the Dominion (from which Returns

School.	Reserve.	Agency.	Teacher.	Denomination.
BRITISH COLUMBIA—*Con.*				
Saanich	Saanich	Cowichan	Wm. Thompson	Church of England
Skidegate	Queen Charlotte Is	Northwest Coast	Miss M. Stevenson	Methodist
Somenos	Somenos	Cowichan	Miss Mary Lomas	Roman Catholic
Songhees	Songhees	"	Sister M. Berchmans	"
Tsartlip	Tsartlip	"	Miss Virginia Hagan	"
Ucluelet	Itedse	West Coast	Miss E. M. Armstrong	Presbyterian
Total, British Columbia				
MANITOBA.				
†Assabasca	Rainy River	Rat Portage	R. E. Atkinson	Undenominational
‡Berens River	Berens River	Berens River	B. W. Brennen	Methodist
Black River	Black River	" "	Robert Thomas	Church of England
Brokenhead	Brokenhead	Clandeboye	W. Sweetman	" "
Chemawawin	Chemawawin	Pas	Richard Hooker	" "
Couchiching	Couchiching	Couchiching	Alfred Bruyere	Roman Catholic
Crane River	Crane River	Manitowapah	John Moar	Church of England
Cross Lake	Cross Lake	Berens River	Chas. C. German	Methodist
Cumberland	Cumberland	Pas	Chas. Quinney	Church of England
Eagle Lake	Eagle Lake	Savanne	Arthur J. Bruce	" "
Ebb and Flow Lake	Ebb & Flow Lake	Manitowapah	Miss Ther. Beaubien	Roman Catholic
Fairford (Upper)	Fairford	"	Rev. Geo. Bruce	Church of England
" (Lower)	"	"	Robert Bruce	" "
Fisher River	Fisher River	Berens River	Miss Eva Savage	Methodist
Fort Alexander (Upper)	Fort Alexander	Clandeboye	Sydney B. Barrett	Church of England
" " (R.C.)	" "	"	W. Geo. Gow	Roman Catholic
Frenchman's Head	Lac Seul	Savanne	R. F. McDougall	Church of England
Grand Rapids	Grand Rapids	Pas	J. Isbester	" "
Hollowwater River	Hollowwater River	Berens River	John Sinclair	" "
Islington	Islington	Rat Portage	J. S. Newton	" "
§Jackhead	Jackhead	Berens River	M. Sanderson	" "
Lac Seul (Canoe River)	Lac Seul	Savanne	Louis LaRonde	" "
" " (Treaty Point)	" "	"	Rev. T. H. Pritchard	" "
Lake Manitoba	Lake Manitoba	Manitowapah	Louis E. Martel	Roman Catholic
Lake St. Martin	Lake St. Martin	"	T. H. Dodds	Church of England
Little Forks	Little Forks	Couchiching	D. W. Wood	" "
Little Saskatchewan	Little Saskatche'n.	Manitowapah	John E. Favell	" "
Long Sault	Long Sault	Couchiching	Miss Annie Miller	" "
Manitou Rapids	Manitou Rapids	"	R. H. Bagshaw	" "
Moose Lake	Moose Lake	Pas	Thomas Bear	" "
Muckle's Creek	St. Peter's	Clandeboye	Miss H. McKenzie	" "
Pas	Pas	Pas	" H. Hines	" "
Pine Creek	Pine Creek	Manitowapah	Rev. P. Bousquet	Roman Catholic
Poplar River	Poplar River	Berens River	Joseph Dargue	Methodist
Red Earth	Red Earth	Pas	Walter C. Lundie	Church of England
Rossville	Norway House	Berens River	Joseph H. Lowes	Methodist
Sandy Bay	Sandy Bay	Manitowapah	J. F. Girardeau	Roman Catholic
Shoal Lake	Pas Mountain	Pas	Louis Cochrane	Church of England
Stangecoming	Stangecoming	Couchiching	Alex. Ramstein	Roman Catholic
St. Peter's (North)	St. Peter's	Clandeboye	Miss Lizzie McLean	Church of England
" (South)	"	"	Miss I. J. Jackson	" "
" (East)	"	"	Richard S. Cushing	" "
" (R.C.)	"	"	Miss Mary Fitzgerald	Roman Catholic

* No return received for September quarter, 1901. † No returns received for the March and June return received. Day pupils at the boarding school.

SESSIONAL PAPER No. 27

STATEMENT—*Continued.*

have been received) for the Year ended June 30, 1902.

Appropriation for Salary or yearly grant.	From what Fund Paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls	Total.		I	II	III	IV	V	VI	
$ cts.												British Columbia—*Con.*
300 00	Vote	18	2	20	15	7	4	4	4	1	....	Saanich.
300 00	"	15	14	29	15	11	7	3	8	....	....	Skidegate.
300 00	"	13	7	20	10	18	1	1	....	....	....	Somenos.
300 00	"	5	8	13	7	3	7	3	....	....	....	Songhees.
300 00	"	15	7	22	13	7	15	....	....	....	....	Tsartlip.
300 00	"	15	13	28	8	18	4	5	1	....	....	Ucluelet.
.....	.....	455	387	812	432	446	197	119	75	4	1	
												Manitoba.
300 00	Vote	9	10	19	7	11	8	....	....	....	....	Assabasca.
300 00	"	13	8	21	4	9	9	3	....	....	....	Berens River.
300 00	"	9	5	14	7	7	3	4	....	....	....	Black River.
300 00	"	9	10	19	8	12	5	2	....	....	....	Brokenhead.
300 00	"	17	13	30	17	12	8	10	....	....	....	Chemawawin.
300 00	"	15	9	24	12	13	7	3	1	....	....	Couchiching.
300 00	"	13	3	16	10	9	4	3	....	....	....	Crane River.
300 00	"	16	13	29	10	26	3	....	....	....	....	Cross Lake.
300 00	"	15	9	24	13	22	2	....	....	....	....	Cumberland.
300 00	"	7	6	13	9	5	4	4	....	....	....	Eagle Lake.
300 00	"	10	9	19	15	8	6	5	....	....	....	Ebb and Flow Lake.
300 00	"	6	12	18	10	9	2	2	....	5	....	Fairford (Upper).
300 00	"	17	16	33	17	21	12	....	....	....	....	" (Lower).
300 00	"	30	13	43	19	28	4	5	6	....	....	Fisher River.
300 00	"	17	12	29	11	20	3	6	....	....	....	Fort Alexander (Upper).
300 00	"	18	9	27	13	23	4	....	....	....	....	" " (R.C.)
300 00	"	16	14	30	11	25	2	3	....	....	....	Frenchman's Head.
300 00	"	13	11	24	15	10	11	3	....	....	....	Grand Rapids.
300 00	"	11	13	24	9	10	6	5	3	....	....	Hollowwater River.
300 00	"	14	9	23	8	20	3	....	....	....	....	Islington.
300 00	"	14	8	22	6	18	4	....	....	....	....	Jackhead.
300 00	"	8	12	20	11	11	9	....	....	....	....	Lac Seul (Canoe River).
300 00	"	14	12	26	10	15	9	2	....	....	....	" " (Treaty Point).
300 00	"	17	12	29	9	18	11	....	....	....	....	Lake Manitoba.
300 00	"	23	15	38	25	26	8	3	1	....	....	Lake St. Martin.
300 00	"	7	4	11	3	8	2	1	....	....	....	Little Forks.
300 00	"	12	10	22	12	11	7	2	2	....	....	Little Saskatchewan.
300 00	"	6	13	19	8	14	1	1	2	1	....	Long Sault.
300 00	"	10	10	20	6	17	1	2	....	....	....	Manitou Rapids.
300 00	"	9	9	18	7	12	4	2	....	....	....	Moose Lake.
300 00	"	10	10	20	7	12	5	1	2	....	....	Muckle's Creek.
300 00	"	17	25	42	19	27	5	10	....	....	....	Pas.
12·per c.	"	7	15	22	17	4	9	5	3	1	....	Pine Creek.
300 00	"	31	16	47	22	24	8	13	2	....	....	Poplar River.
300 00	"	10	12	22	12	19	3	....	....	....	....	Red Earth.
300 00	"	14	17	31	13	26	2	3	....	....	....	Rossville.
300 00	"	10	17	27	17	21	3	2	1	....	....	Sandy Bay.
300 00	"	8	9	17	13	7	1	5	2	2	....	Shoal Lake.
300 00	"	12	11	23	9	23	....	....	....	....	....	Stangecoming.
300 00	"	7	10	17	8	6	3	1	7	....	....	St. Peter's (North).
300 00	"	22	16	38	16	14	6	12	6	....	....	" (South).
300 00	"	15	15	30	14	9	8	5	8	....	....	" (East).
300 00	"	6	9	15	7	9	4	....	1	1	....	" (R.C.)

quarters 1902. ‡ No returns received for the September and December quarters 1901. § Only one

STATEMENT of Day Schools in the Dominion (from which Returns

School.	Reserve.	Agency.	Teacher.	Denomination.
MANITOBA—*Concluded.*				
Swan Lake	Swan Lake	Portage la Prairie	K. M. Garrioch	Presbyterian
Wabigoon	Wabigoon	Savanne	Mrs. Amy Johns	Church of England
*Wabuskang	Wabuskang	"	James Fox	"
Total, Manitoba				
NORTHWEST TERRITORIES				
Attakakoop	Attakakoop	Carlton	Miss M. A. Caswell	Church of England
Big River	Kenemotayoos	"	Louis Ahenakew	"
Bulls Horn	Blood	Blood	L. F. Hardyman	"
Day Star	Day Star	Touchwood Hills	Miss S. E. Smythe	"
Goodfish Lake	Pakan	Saddle Lake	Vincent Smith	Methodist
†Gordon's	George Gordon's	Touchwood Hills	M. Williams	Church of England
Hay River (St. Peter's Mission).	At Hay River, Gr. Slave Lake.	In Treaty No. 8	Rev. Thos. J. Marsh	"
Irene Training	At Fort Vermilion	" 8	Henry B. DeCoteau	"
James Smith's	James Smith's	Duck Lake	D. McDonald	"
John Smith's	John Smith's	"	Miss Ethel Shipman	"
Joseph's	Joseph's	Edmonton	Miss Const. DeCazes	Roman Catholic
Key's	Keys	Pelly	Owen Owens	Church of England
Keeseekouse	Keeseekouse	"	Felix Ingold	Roman Catholic
Lac la Ronge	Lac la Ronge	Carlton	Samuel Abraham	Church of England
Little Pine's	Little Pine's	Battleford	C. T. Desmarais	"
Louis Bull's	Louis Bull's	Hobbema	A. A. Goodhand	Methodist
Meadow Lake	Meadow Lake	Carlton	Ph. Garnot	Roman Catholic
Mistawasis	Mistawasis	"	Miss Jen. W. Moore	Presbyterian
Montreal Lake	Montreal Lake	"	Jno. R. Settee	Church of England
‡Morley No. 1	Bearspaw	Stony	Andrew Sibbald	Methodist
Okanase	Okanase	Birtle	R. C. McPherson	Presbyterian
Poundmaker's	Poundmaker's	Battleford	Regina Arcand	Roman Catholic
Red Pheasant	Red Pheasant	"	Miss M. Wilson	Church of England
Saddle Lake	Saddle Lake	Saddle Lake	Charles W. Leonard	Methodist
Sampson's	Sampson's	Hobbema	Miss Mina German	"
Shoal River	Key's	Pelly	Rev. A. T. Norquay	Church of England
Sioux Mission	Near Prince Albert	"	Miss Lucy M. Baker	Presbyterian
Sturgeon Lake	Twatt's	Carlton	Robert Bear	Church of England
*Sweet Grass	Sweet Grass	Battleford	J. N. Paquet	Roman Catholic
St. Anthony's	Lesser Slave Lake, Peace River Dis.	In Treaty No. 8	Rev. Father Desmarais, O.M.I	" "
Thunderchilds, (C.E.)	Thunderchild's	Battleford	Philip McDonald	Church of England
Vermilion (St. Henri)	At Fort Vermilion	In Treaty No. 8	Rev. C. Joussard, O.M.I	Roman Catholic
Wabiscow Lake (C.E.)	At St. John's Miss. Wabiscow Lake.	" "	Miss Eliza Scott	Church of England
Wabiscow Lake (R.C)	At St. Martin's Miss., Wabiscow Lake	" "	Sister Joseph Mary	Roman Catholic
White Cap Sioux	Moose Woods		Mrs. W. R. Tucker	Methodist
Whitefish Lake	James Seenum's	Saddle Lake	Miss J. S. R. Batty	"
Total, N. W. T				

* No returns received for the September and December quarters, 1901. † Day pupils at the boarding
‡ School closed September quarter, 1901.

SESSIONAL PAPER No. 27

STATEMENT—*Continued.*

have been received) for the Year ended June 30, 1902.

Appropriation for Salary or Yearly Grant.	From which Fund paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls.	Total.		I	II	III	IV	V	VI	
$ cts.												Manitoba—*Con.*
300 00	Vote..	6	6	12	7	10	1	1	....	....	....	Swan Lake.
300 00	"	12	12	24	10	16	2	5	1	....	....	Wabigoon.
300 00	"	9	8	17	6	17	....	..	....	....	....	Wabuskang.
....	....	591	517	1108	519	694	222	134	48	10	....	Total, Manitoba.
												N.W. Territories.
300 00	Vote..	8	10	18	8	14	2	1	1	....	....	Attakakoop.
300 00	"	2	9	11	8	10	1	....	....	....	....	Big River.
300 00	"	14	13	27	8	27	....	....	....	....	....	Bulls Horn.
300 00	"	7	7	14	12	5	3	3	3	....	....	Day Star.
300 00	"	15	7	22	11	17	4	....	1	....	....	Goodfish Lake.
12 p.cap.	"	1	..	1	1	1	....	....	....	....	....	Gordon's.
200 00	"	21	19	40	36	27	11	1	1	....	....	Hay River (St. Peter's Mission).
300 00	"	1	3	4	2	4	....	....	....	....	....	Irene Training.
300 00	"	18	11	29	6	27	2	....	....	....	....	James Smith's.
300 00	"	10	9	19	7	13	3	3	....	....	....	John Smith's.
300 00	"	12	13	25	5	24	1	....	....	....	....	Joseph's.
300 00	"	5	14	19	9	14	3	2	....	....	....	Keys.
300 00	"	5	4	9	5	6	3	..	....	....	....	Keesseekouse.
300 00	"	12	13	25	10	23	2	....	....	....	....	Lac la Ronge.
300 00	"	10	8	18	9	14	3	1	....	....	....	Little Pine's.
300 00	"	8	3	11	6	6	2	3	....	....	....	Louis Bull's.
300 00	"	3	5	8	6	8	....	....	....	....	....	Meadow Lake.
300 00	"	9	10	19	8	13	2	2	2	....	....	Mistawasis.
300 00	"	12	13	25	14	13	9	3	....	....	....	Montreal Lake.
300 00	"	15	17	32	12	30	2	..	....	..	....	Morley No. 1.
300 00	"	5	9	14	7	9	2	3	....	....	....	Okanase.
300 00	"	8	7	15	5	8	4	3	....	....	....	Poundmaker's.
300 00	"	15	6	21	9	12	6	2	1	....	....	Red Pheasant
300 00	"	8	4	12	4	7	5	....	....	....	....	Saddle Lake
300 00	"	15	11	26	5	26	....	....	....	....	....	Sampson's
300 00	"	8	18	26	13	17	5	4	....	....	....	Shoal River
300 00	"	5	6	11	8	5	3	3	....	....	....	Sioux Mission
300 00	"	8	3	11	4	10	1	....	....	....	....	Sturgeon Lake
300 00	"	4	2	6	3	3	3	....	....	....	....	Sweet Grass
300 00	"	6	5	11	11	7	2	2	....	....	....	St. Anthony's
300 00	"	8	2	10	4	4	6	..	....	....	....	Thunderchild's (C. E.)
300 00	"	3	6	9	7	9	....	....	....	....	....	Vermilion (St. Henri)
300 00	"	5	12	17	9	10	5	2	....	....	....	Wabiscow Lake (C.E.)
300 00	"	11	17	28	28	15	9	4	....	....	....	Wabiscow Lake (R.C.)
300 00	"	5	8	13	8	4	1	3	4	1	..	White Cap Sioux
300 00	"	7	8	15	7	11	3	1	....	....	....	Whitefish Lake
.....	.....	309	312	621	315	453	108	46	13	1	....	Total, N.W.T.

school. ‡ School re-opened January 21, 1902, having been closed since the end of the June quarter, 1899.

STATEMENT of Day Schools in the Dominion (from which

School.	District.	Teacher.	Denomination.
OUTSIDE TREATY LIMITS.			
Albany Mission	Moosonee diocese, James bay	Rev. Robt. J. Renison	Church of England
Moose Fort	" "	F. Mark	" "
Moosehide	Yukon district, Klondike	Rev. Benjamin Totty	" "
Nelson House	Keewatin district	Sara A. Kitchen	Methodist
Providence Mission (Sacred Heart)	Athabasca and McKenzie Riv. diocese	Sister St. Elzear	Roman Catholic
St. David's Mission	Fort Simpson, McKenzie Riv. district	James R. Lucas	Church of England
York Factory	Moosonee district, Hudson bay	Rev. R. Faries	" "
Total, Outside Treaty			

SESSIONAL PAPER No. 27

STATEMENT—*Continued.*

Returns have been Received) for the Year ended June 30, 1902.

Appropriation for Salary or yearly Grant.	From What Fund paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls.	Total.		I	II	III	IV	V	VI	
$ cts.												Outside Treaty Limits.
200 00	Vote	22	30	52	37	22	15	6	2	7		Albany Mission.
200 00	"	49	45	94	47	94						Moose Fort.
		12	12	24		24						Moosehide.
200 00	Vote	13	23	36	8	35			1			Nelson House.
200 00	"	10	9	19	15	11	5	3				Providence Mission. (Sacred Heart).
200 00	"	2	3	5	2	2	1	2				St. David's Mission.
200 00	"	13	12	25	17	15	4	3	3			York Factory.
		121	134	255	126	203	25	14	6	7		Total, Outside Treaty.

SCHOOL

STATEMENT of Boarding Schools

School.	Situation.	Principal.	Denomination.
ONTARIO.			
Fort William Orphanage..	At Fort William.....	Sr. M. Ignatia....	Roman Catholic...
BRITISH COLUMBIA.			
Alberni	At Alberni, Tresaht reserve, West Coast agency.....	James R. Motion ...	Presbyterian .....
Albert Bay Girls' Home.....	At Alert bay, Nimkish reserve, Kwawkewlth agency	Rev. A. W. Corker..	Church of England
Clayoquot	Adjoining Opitsat, No. 1 reserve, West Coast agency.....	Rev. P. Maurus.....	Roman Catholic...
Port Simpson Girls' Home...	At Port Simpson, Northwest Coast agency	Miss Hannah M. Paul	Methodist .....
Squamish	At Squamish, Fraser River agency.	Sr. Mary Amy.....	Roman Catholic...
St. Mary's.....	At St. Mary's Mission, on the Fraser river.....	Rev. J. Tavernier, O.M.I.....	" ...
Yale (All Hallows).....	At Yale, on the Fraser river.....	Amy, Sister Superior.	Church of England
Total, British Columbia..	.....	.....	.....
MANITOBA.			
Norway House.....	At Norway House, Berens River agency	E. F. Hardiman	Methodist .....
Pine Creek..	At mouth of Pine creek, Lake Winnipegosis, Manitowapah agency..	Rev. P. Bousquet...	Roman Catholic...
Portage la Prairie.....	At Portage la Prairie, Man.....	W. A. Hendry.....	Presbyterian .. ...
Rat Portage	At Rat Portage, Ont	Rev. C. Cahill, O.M.I	Roman Catholic...
Total, Manitoba ...	.....	.....	.....
NORTHWEST TERRITORIES.			
Birtle	At Birtle, Man	W. McWhinney	Presbyterian .....
Blood (C.E.).....	On Blood reserve, Blood agency...	Arthur DeB. Owen..	Church of England
" (R.C.)	" " ...	Rev. Z. L. LeVern, O.M.I.	Roman Catholic...
Blue Quill's	Blue Quill's reserve, Saddle Lake agency	Leon Balter (acting).	" ...
Crowfoot.....	On Blackfoot reserve	Rev. J. Rion, O.M.I.	" ...
Crowstand.....	Near Coté's reserve, Pelly agency..	Rev. Neil Gilmour..	Presbyterian .....
Cowessess'....	On Cowessess' reserve, Crooked Lake agency	Rev. S. Perrault, O.M.I.....	Roman Catholic. .
Duck Lake	On Duck Lake reserve, Duck Lake agency	Rev. M. J. P. Paquette, O.M.I....	" " ...
Emmanuel College....	At Prince Albert, Sask..	Rev. James Taylor..	Church of England
Ermineskin's.. ...	On Ermineskin's reserve, Hobbema agency	Rev. R. L. Dauphin, O.M.I.	Roman Catholic...
File Hills.....	On File Hills reserve..	Miss Kate J. Gillespie	Presbyterian.....
Gordon's	On Geo. Gordon's reserve, Touchwood Hills agency.....	M. Williams.... ...	Church of England

SESSIONAL PAPER No. 27

STATEMENT—*Continued.*

in the Dominion for the year ended June 30, 1902.

Grant.	From what Fund paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls.	Total.		I	II	III	IV	V	VI	
												Ontario.
$500	Vote..	10	19	29	21	16	2	8	2	1	....	Fort William Orphanage.
												British Columbia.
30 pupils, $60 per cap.	" .	29	17	46	40	19	12	10	3	2	....	Alberni.
10 " $60 " ..	" ..	....	10	10	10	...	1	1	1	1	6	Alert Bay Girls' Home.
50 " $60 " ..	" ..	26	26	52	48	18	15	16	3	.....	....	Clayoquot.
20 " $60 " ..	"	....	39	39	36	7	11	15	4	2	....	Port Simpson Girls' Home.
50 " $60 " ..	" ..	13	16	29	27	8	12	9	.....	.....	....	Squamish.
60 " $60 " ..	" ..	27	36	63	63	3	14	26	15	5	....	St. Mary's.
35 " $60 " ..	" ..	....	33	33	25	7	4	6	7	7	2	Yale (All Hallows).
....	.....	95	177	272	249	62	69	83	33	17	8	Total, British Columbia.
												Manitoba.
50 pupils, $72 per cap.	Vote..	26	32	58	56	20	22	6	8	2	....	Norway House.
55 " $72 " ..	" ..	28	39	67	60	2	36	6	12	6	5	Pine Creek.
20 " $72 " ..	" ..	10	11	21	19	11	1	3	3	3	...	Portage la Prairie.
30 " $72 " ..	" ..	14	19	33	29	13	4	8	8	...	....	Rat Portage.
. ...	.....	78	101	179	164	46	63	23	31	11	5	Total, Manitoba.
												Northwest Territories
40 pupils, $72 per cap.	Vote..	14	34	48	39	22	12	11	3	.	....	Birtle.
50 " $72 " ..	" ..	30	26	56	48	15	4	12	13	12	...	Blood (C.E.)
25 " $72 " ..	" ..	14	7	21	16	15	6	....	.....	.....	.....	" (R.C.)
45 " $72 " ..	" ..	30	15	45	40	15	8	12	8	2	....	Blue Quill's.
23 " $72 " ..	" ..	13	6	19	18	9	6	4	.....	.....	.....	Crowfoot.
40 " $72 " ..	" ..	23	19	42	38	19	7	12	2	2	....	Crowstand.
40 " 72 " ..	"	21	17	38	32	25	7	6	....	...	....	Cowessess'.
100 " 100 " ..	"	54	50	104	99	54	18	14	18	.....	....	Duck Lake.
20 boys, $100 p. cap 32 " and girls, $72 "	"	36	26	62	51	16	11	14	14	4	3	Emmanuel College.
50 pupils, $72 per cap.	"	27	23	50	46	24	9	8	7	1	1	Ermineskin's.
15 " 72 " ..	"	8	7	15	14	7	...	....	7	1	....	File Hills.
30 " 72 " ..	"	13	17	30	30	2	8	....	11	9	....	Gordon's.

SCHOOL

STATEMENT of Boarding Schools

School.	Situation.	Principal.	Denomination.
N. W. TERRITORIES—*Con.*			
Holy Angels	At Nativity Mission, Fort Chipewyan	Rev. Sr. McDougall	Roman Catholic...
Isle à la Crosse	At Isle à la Crosse, McKenzie River district	Rev. Sr. Thiffault...	" " ...
Lesser Slave Lake C.E	At Lesser Slave Lake, Peace River district	C. D. White	Church of England
" " " R.C	At Lesser Slave Lake, Peace River district	Rev. A. Desmarais, O.M.I.	Roman Catholic...
Muscowequan's	On Muscowequan's reserve, Touchwood Hills agency	I. Jacob	" " ...
McDougall Orphanage	On Morley reserve, Stony agency	John W. Niddrie	Methodist
*Old Sun's	On Blackfoot reserve	Rev. H. W. Gibbon	
Onion Lake R.C	On Seekaskooteh reserve, Onion Lake agency	Stocken Rev. Cypr. Boulene, O.M.I.	Church of England Roman Catholic...
" C.E	On Seekaskootch reserve, Onion Lake agency	Rev. J. R. Matheson	Church of England
Peigan C.E	On Peigan reserve, Peigan agency.	W. R. Haynes	" "
" R.C	" " "	Rev. L. Doucet, O.M.I.	Roman Catholic...
Round Lake	In Crooked Lake agency	Rev. H. McKay	Presbyterian
Sarcee	On Sarcee reserve, Sarcee agency	Percy Stocken	Church of England
Smoky River (St. Augustine)	Near Peace River crossing, at mouth of Smoky river	Rev. Sister Sosténe	Roman Catholic...
St. Albert	At St. Albert settlement, Alta	Rev. Sister Dandurand	" " ...
Thunderchild's	On Thunderchild's reserve, Battleford agency	Rev. H. Delmas, O.M.I.	" " ...
Total, N.W.T.			

* The Old Sun's and White Eagle boarding schools were amalgamated and the latter closed at the end

SESSIONAL PAPER No. 27

STATEMENT—*Continued.*

in the Dominion for the year ended June 30, 1902.

Grant.	From what Fund paid.	Number on Roll.			Average Attendance.	Standard.						School.
		Boys.	Girls.	Total.		I	II	III	IV	V	VI	
												N. W. Territories—*Con.*
40 pupils, $72 per cap.	Vote	19	17	36	26	27	5	4	....	....	....	Holy Angels.
12 " 72 " ..	"	3	9	12	12	5	7	..	....	....	....	Isle à la Crosse.
15 " 72 " ..	"	29	26	55	31	24	14	10	7	....	....	Lesser Slave Lake, C. E
40 " 72 " ..	"	25	16	41	40	13	13	9	6	....	....	" " R. C.
30 " 72 " ..	"	17	13	30	30	8	6	8	7	1	....	Muscowequan's.
40 " 72 " ..	"	22	23	45	43	20	5	10	10	...	....	McDougall Orphanage.
20 " 72 " ..	"	27	17	44	39	28	9	4	3	....	....	Old Sun's.
50 " 72 " ..	"	30	22	52	46	21	11	8	6	4	2	Onion Lake, R. C.
16 " 72 " ..	"	11	10	21	16	9	1	4	4	3	...	" C. E.
30 " 72 " ..	"	12	12	24	20	18	2	4	....	....	....	Peigan, C. E.
20 " 72 " ..	"	10	15	25	20	9	7	9	....	....	....	" R. C.
40 " 72 " ..	"	17	14	31	24	14	7	6	1	3	....	Round Lake.
15 " 72 " ..	"	8	8	16	14	6	4	4	...	2	....	Sarcee.
15 " 72 " ..	"	8	11	19	16	8	11	....	....	...	...	Smoky River (St. Augustine).
80 " 72 " ..	"	42	38	80	70	36	23	12	9	....	....	St. Albert.
15 " 72 " ..	"	8	7	15	13	6	9	....	....	....	....	Thunderchild's.
.....	.....	571	505	1076	931	475	230	185	136	44	6	Total, N.W.T.

of the September quarter, 1901, the pupils being transferred to Old Sun's.

STATEMENT of Industrial Schools in

School.	Situation.	Principal.	Denomination.	Grant.
ONTARIO.				
Mohawk Institute	At Brantford	Rev. R. Ashton	Undenominational	91 pupils at $60 p. capita
Mount Elgin "	At Muncey	Rev. W. W. Shepherd	Methodist	100 " $60 "
Shingwauk Home	At Sault Ste. Marie	Geo. Ley King	Church of England	100 " $60 "
Wikwemikong (Boys)	At Wikwemikong	Rev. G. A. Artus	Roman Catholic	60 " $60 "
" (Girls)	" "	" "	" "	60 " $60 "
Total, Ontario				
BRITISH COLUMBIA.				
Alert Bay	At Alert Bay on Nimkish reserve	Rev. A. W. Corker	Church of England	35 pupils at $130 p. capita
Coqualeetza Home	At Chilliwack, Fraser River agency	Rev. Jos. Hall	Methodist	80 " $130 "
Kamloops	At Kamloops	Rev. A. M. Carion	Roman Catholic	50 " $130 "
Kootenay	At Kootenay	Rev. N. Coccola	" "	50 " $130 "
Kuper Island	At Kuper Island, Cowichan agency	Rev. G. Donckele	" "	50 " $130 "
Metlakahtla	At Metlakahtla, West Coast agency	John R. Scott	Church of England	25 boys at $140 " / 25 girls at $100 "
Williams Lake	At Williams Lake	Rev. H. Boening	Roman Catholic	50 pupils at $130 "
Total, B.C.				
MANITOBA.				
Brandon	At Brandon	Rev. T. Ferrier	Methodist	100 pupils at $120 p. capita
*Elkhorn	At Elkhorn	A. E. Wilson	Undenominational	
*Rupert's Land	At Middlechurch	W. J. Chisholm (Ac)	"	
St. Boniface	At St. Boniface	Rev. J. B. Dorais	Roman Catholic	100 pupils at $100 p. capita
Total, Manitoba				
NORTHWEST TERRITORIES.				
Battleford	At Battleford, Sask	Rev. E. Matheson	Church of England	120 pupils at $145 p. capita
*Calgary	At Calgary, Alta	Rev. G. H. Hogbin	" "	
Qu'Appelle	At Qu'Appelle, Assa	Rev. J. Hugonard	Roman Catholic	225 pupils at $125 p. capita
Red Deer	At Red Deer, Alta.	Rev. C. E. Somerset	Methodist	80 " $140 "
Regina	At Regina, Assa	Rev. J. A. Sinclair	Presbyterian	225 " $130 "
St. Joseph's	At High River, Alta.	Rev M. Lépine OMI	Roman Catholic	120 " $140 "
Total, N. W. T.				

NOTE.—All boys at industrial schools are taught farming and all girls sewing, knitting and general

*All expenses paid by Government.

SESSIONAL PAPER No. 27

STATEMENT—*Concluded.*

the Dominion for the Year ended June 30, 1901.

From what Fund paid.	Number on Roll.			Average Attendance.	Standard.						Industries.								School.
	Boys.	Girls.	Total.		I	II	III	IV	V	VI	Carpenter.	Shoemaker.	Tailor.	Blacksmith.	Baker.	Harnessmaker	Printer.	Tinsmith.	
																			Ontario.
Vote	59	71	130	118	12	8	46	22	20	22	1								Mohawk Institute.
"	57	46	103	101	21	12	31	23	16										Mount Elgin "
Vote&school f'd	56	15	71	62	13	13	13	19	13		8			1					Shingwauk Home.
Vote	77		77	71	16	26	17	14	4		6	3		2				1	Wikwemik'g(Boys)
"		60	60	55	13	15	12	15	5										" (Girls.)
	249	192	441	407	75	74	119	93	58	22	15	3		3				1	Total, Ontario.
																			British Columbia.
Vote	33		33	33	8	8	8	9			19								Alert Bay.
"	64	30	94	82	21	6	26	19	7	15	1	4			4				Coqualeetza Home.
"	26	30	56	52	10	4	14	8	13	7	12	5							Kamloops.
"	33	25	58	53	3	14	13	12	13	3		1							Kootenay.
"	41	28	69	62	6	3	17	15	12	16	5	7			11			2	Kuper Island.
"	28	24	52	26		8	19	10	14	1									Metlakahtla.
"	20	30	50	42	3	8	20	8	11		3					3			Williams Lake.
	245	167	412	350	51	51	117	81	70	42	40	17			15	3		2	Total, B.C.
																			Manitoba.
Vote	54	60	114	104	48	14	19	33			3								Brandon.
	55	30	85	70	26	22	19	10	8		7	6			1	1			Elkhorn.
	82	55	137	120	18	34	43	28	6	8	9		4	3			2	2	Rupert's Land.
Vote	58	37	95	87	16	26	29	19	5		4								St. Boniface.
	249	182	431	381	108	96	110	90	19	8	23	6	4	3	1	1	2	2	Total, Manitoba.
																			Northwest Territories.
Vote	51	46	97	92	27	20	20	18	12		5			2	4				Battleford.
	48		48	37	8	14	17	9											Calgary.
Vote	108	128	236	225	43	41	92	37	23		10	8		5	5			2	Qu'Appelle.
"	43	23	66	62	16	16	18	12	4		5								Red Deer.
"	72	47	119	90	33	25	33	18	10		13			2	5		6		Regina.
"	54	24	78	73	24	20	11	13	10		4	1			1				St. Joseph.
	376	268	644	579	151	136	191	107	59		37	9		9	15		6	2	Total, N.W.T.

household duties.

SUMMARY OF

Province.	Class of School.			Number of Schools.	Denomination.					Number on Roll.			Average Attendance.
	Day.	Boarding.	Industrial.		Undenominational	Roman Catholic.	Church of England	Methodist.	Presbyterian.	Boys.	Girls.	Total.	
Ontario	71	1	5	77	36	22	9	10	...	1,456	1,204	2,660	1,469
Quebec	17	..	....	17	2	11	1	3	...	423	359	782	369
Nova Scotia	10	...	....	10	...	10	....	..	....	125	93	218	89
New Brunswick	6	....	..	6	..	6	....	...	....	72	71	143	69
Prince Edward Island	1	....	....	1	....	1	....	....	...	11	15	26	12
British Columbia	27	7	7	41	....	13	13	11	4	795	731	1,526	1,031
Manitoba	46	4	4	54	3	11	31	7	2	918	800	1,718	1,064
Northwest Territories	36	28	6	70	....	25	28	9	8	1,256	1,085	2,341	1,825
Outside Treaty Limits	7	....	....	7	....	1	5	1	....	121	134	255	126
Total	221	40	22	283	41	100	87	41	14	5,177	4,492	9,669	6,054

NOTE.—All boys at industrial schools are taught farming.

DEPARTMENT OF INDIAN AFFAIRS,
OTTAWA, September 24, 1902.

SCHOOL STATEMENT.

Percentage of Attendance.	Standard.						Industries Taught.								Total.	Province.
	I	II	III	IV	V	VI	Carpenter.	Shoemaker.	Tailor.	Blacksmith.	Baker.	Harnessmaker.	Printer.	Painter.	Tinsmith.		
55·23	1,171	573	462	278	134	42	15	3	..	3	..	..	..	..	1	22	Ontario.
47·19	404	182	115	44	20	17	..	..	..	..	..	..	..	..	..	.....	Quebec.
40·82	109	29	40	17	15	8	..	..	..	..	..	..	..	..	..	.....	Nova Scotia.
48·25	75	19	22	13	7	7	..	..	..	..	..	..	..	..	..	.....	New Brunswick.
46·23	11	8	5	1	..	1	..	..	..	..	..	..	..	..	..	.....	Prince Edward Island.
67·56	559	317	319	189	91	51	40	17	..	..	15	3	..	2	.	77	British Columbia.
61·93	848	381	267	169	40	13	23	6	4	3	1	1	2	2	..	42	Manitoba.
77·96	1,079	474	422	256	104	6	17	9	..	9	15	..	6	2	..	78	Northwest Territories.
49·41	203	25	14	6	7	..	.	..	..	..	..	..	..	..	..		Outside Treaty Limits.
62·61	4,459	2,008	1,666	973	418	145	115	35	4	15	31	4	8	6	1	219	Total.

INDIAN LAND STATEMENT

SHOWING the number of acres of Indian Lands sold during the year ended June 30, 1902, the total amount of purchase money, and the approximate quantity remaining unsold at that date.

PROVINCE OF ONTARIO.

Town or Township.	County or District.	Number of acres of Land sold.	Amount of Sales.	Approximate Quant ty remaining unsold.	Remarks.
		Acres.	$ cts.	Acres.	
Albemarle	Bruce			214·00	Some of these lands
Amabel	"	353·00	188 90		were resumed by the
Eastnor	"	253·00	25 30	2,994 00	department, the con-
Lindsay	"	313·00	88 70	3,329 00	ditions of sale not
St. Edmund	"	448·00	70 00	3,819 00	having been complied
Bury (Town Plot)	"	527·18	434 50	255·98	with, so that in cer-
Hardwicke (Town Plot)	"			1,111 00	tain cases there ap-
Oliphant "	"	85·50	128 25	40·09	pears to have been
Southampton "	"			21·75	more land remaining
Wiarton (town)	"	6·30	148 00	17 15	unsold at the close of
Brooke (Town Plot)	Grey	3·00	360 00		the past fiscal year
Keppel	"			2,210 60	than remained unsold
Saugeen Fishing Islands	Lake Huron	152·15	565 00	1,580 90	according to the pre-
Thessalon	Algoma District	453·96	453 96	2,426·44	vious year's report.
Thessalon (town)	"	8·67	372 65	33·59	
Aweres	"	756·20	473 30	12,767 80	
Archibald	"			2,900 00	
Dennis	"	606 50	303 25	923·50	
Fisher	"	180·00	92 50	9,029 00	
Herrick	"	160·00	80 00	6,873·53	
Haviland	"			3,422 00	
Kars	"	8 00	4 00	9,451·00	
Apaquosh (Town Plot)	"	1 29	15 00	313·71	
Laird	"	2,999·05	1,890 43	4,905·43	
Macdonald	"	279·83	139 92	2,040 35	
Meredith	"	2,302 95	1,171 98	4,695·15	
Duncan	"			14,258 00	
Kehoe	"	3,089 50	2,008 22	13,396·50	
Thompson	"	154 73	201 16	773·85	
Cobden	"			255·37	
Pennefather	"	2,336·00	1,168 00	14,640 00	
Ley	"			8,019·00	
Tilley	"			12,691·00	
Tupper	"			2,800 00	
Fenwick	"	1,347·00	1,972 00	10,426·60	
Vankoughnet	"	489 00	244 50	9,329·00	
Shingcouicouse (Tn. Plot)	"			269·00	
Bidwell	Manitoulin Distr't.	1,096 00	245 20	6,674·00	
Howland	"	395 00	79 00	4,656 00	
Sheguiandah	"	582 00	175 00	8,731·00	
Sheguiandah (Tn. Plot)	"	6·77	250 00	321·59	
Billings	"	381 0	123 60	5,578·00	
Assiginack	"	723 00	144 60	5,971 00	
Campbell	"	541·00	243 30	7,583·00	
Manitowaning (Tn. Plot)	"	21·81	1,149 00	41 78	
Carnarvon	"	399·00	183 88	11,403·00	
Tehkummah	"	283·00	74 10	6,251·00	
Sandfield	"	474 00	110 65	8,506·00	
Shaftesbury (Tn. Plot)	"	29·30	635 50	264·23	
Tolsmaville	"	156·65	346 00	1,371·94	
Allan	"	646 00	214 70	3,788·00	
Burpee	"	588·00	111 40	9,911·00	

SESSIONAL PAPER No. 27

INDIAN LAND STATEMENT showing the Number of Acres of Indian Lands sold during the Year ended June 30, 1902, &c.—*Continued.*

PROVINCE OF ONTARIO—*Concluded.*

Town or Township.	County or District.	Number of acres of Land sold.	Amount of Sales.	Approximate Quantity remaining unsold.	Remarks.
		Acres.	$ cts.	Acres.	
Barrie Island	Manitoulin Distr't.			2,217·00	
Gordon	"	668·00	139 90	3,259·00	
Gore Bay (town)	"	9·66	190 00	5·08	
Mills	"			6,415·00	
Cockburn Island	"	655·00	296 30	30,685·00	
Dawson	"	3,302·00	1,135 95	17,624·00	
Robinson	"	1,501·00	492 30	32,564 00	
Neebing	Thunder Bay Dist.			3,778·00	
Sarnia (Tn. Plot)	Lambton County.			3·02	
Cayuga	Haldimand			312 60	
Cayuga (Tn. Plot)	"			144·34	
Dunn	"			1,571·50	
Caledonia	"			53·94	
Sultana Island	Rainy River Dist.			421·12	
Brantford	Brant			135·85	
Bronte	Halton	·50	40 00	3 70	
Port Credit	Peel			·75	
Deseronto	Hastings	·20	33 75	6·31	
Islands in the River St. Lawrence	Prov. of Ontario	193·81	22,605 00	71·65	
Islands in the Otonabee River and Lakes	Peterborough	48·00	280 00	2,001·58	
White Cloud Island	Georgian Bay			72·88	
Shannonville (Tn. Plot)	Hastings			2·27	
Island in the Bay of Quinte	Prov. of Ontario	·25	10 00	...	
Alnwick	Northumberland	20·80	296 00	1·27	
Michipicoten Reserve	Algoma District	1,481·50	3,603 00		Railway right of way.
Georgian Bay Islands	Parry Sound Dist.	14·50	125 00		
Paskonkin Reserve	Rainy River Dist.	35 05	175 25		
White Fish River	Manitoulin Dist.	764·90	1,584 70		
		32,331·51	47,722 60	344,635·09	

PROVINCE OF QUEBEC.

Oniatchouan	Chicoutimi	707·43	282 98	4,201 62	
Dundee	Huntingdon	417·76	1,044 45	6,856·59	
Viger	Temiscouata			48·00	
Maniwaki (Tn. Plot)	Wright	2 02	751 00	84 35	
Temiscamingue	Pontiac	141 00	98 70	20,477·07	
		1,268·21	2,177 13	31,667·63	

NORTHWEST TERRITORIES.

Papaschase	Alberta			135·00	
Sharphead	"	6,425·60	12,878 00	2,422·19	
Chacastapasin (less Sugar Island)	Saskatchewan	14,699·63	25,473 04	160·00	
Ocean Man and Pheasant Rump	Moose Mt'n Dist.	46,604·31	58,145 00		
		67,729 54	96,496 04	2,717·19	

INDIAN LAND STATEMENT showing the Number of Acres of Indian Lands sold during the Year ended June 30, 1902, &c.—*Concluded.*

PROVINCE OF MANITOBA.

Town or Township.	County or District.	Number of acres of Land sold.	Amount of Sales.	Approximate Quantity remaining unsold.	Remarks.
		Acres.	$ cts.	Acres.	
Gambler's Reserve	Marquette	2,080·00	9,920 00	6,549·60	
St. Peter's Reserve	Selkirk	41·61	624 15	806 08	
		2,121·61	10,544 15	7,355·68	

BRITISH COLUMBIA.

Miyuke Reserve	Kootenay	3·21	80 00		Railway right of way.
False Creek Reserve	Vancouver	7·00	3,500 00		" "
		10·21	3,580 00		

General Remarks.

The land sold during the year amounted to 103,461·08 acres, which realized $100,519.92. The quantity of surrendered land in the hands of the department was, approximately, 386,375·59 acres. The principal outstanding, on account of Indian Lands sold, amounted to $220,896.11, a considerable portion of which has not yet become due.

CENSUS RETURN

CENSUS

CENSUS RETURN of Resident and Nomadic Indians; Denominations to which they belong, and number of Pagans in the Dominion of Canada,

PROVINCE

Indians.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Algonquins, Golden Lake	98				98				
" Renfrew, North	198								
Chippewas of the Thames	476	230		244		2			
" Walpole Island	625	310		296	17				2
" and Pottawattamies of Sarnia	333	83		250					
" " of Kettle and Stony Points	97	4		93					
" Georgina and Snake Islands	115			115					
" Rama	228			213	15				
" Saugeen	372	4		251	37		80		
" Nawash	369	15		230	124				
" Beausoleil	261			177	84				
Iroquois and Algonquins of Watha (Gibson)	133			121	11			1	
Moravians of the Thames	343	77		66				200	
Mississaguas of Mud Lake	167			167					
" Rice Lake	80			80					
" Scugog	36			36					
" Alnwick	234	6		225	3				
" New Credit	244			214		14		16	
Mohawks of the Bay of Quinté	1,250	1,116	133						1
Munsees of the Thames	121	46		75					
Oneidas of the Thames	779	283		379		102		15	
Pottawattamies of Walpole Island	179	78		90	1				10
Ojibbewas and Ottawas of Manitoulin and Cockburn Islands at:—									
Cockburn Island	56				56				
Sheshegwaning	159	11			148				
West Bay	335			1	334				
Sucker Creek	101	83			18				
South Bay	66				66				
Sheguiandah	87	69			18				
Sucker Lake	14				14				
Wikwemikong (unceded) / Wikwemikongsing (unceded)	1,102				1,102				
Obidgewong	7								7
Ojibbewas of Lake Superior at: —									
Fort William	290				231				59
Red Rock or Helen Island	213	38			175				
Pays Plat	45				45				
Lake Nipigon, Gull Bay and Island Point	512	17			180				315
Pic River	209	5			204				
Long Lake	330	61			268				1
Michipicoten and Big Heads	343	163		5	175				
Carried forward	2,807	2,699	133	3,328	3,424	118	80	232	395

ETURN.

belong, with approximate number belonging to each Denomination, as well as the by Provinces, for the Year ended June 30, 1902.

OF ONTARIO.

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
13	11	12	10	4	5	17	22	1	3	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Stragglers
26	53	38	38	33	35	128	103	15	7	
48	51	59	61	33	31	155	155	15	17	
20	21	32	32	17	15	92	86	10	8	
9	8	6	10	3	3	27	28	.....	3	
5	7	9	10	5	6	32	32	4	5	
20	21	13	21	14	11	51	63	6	8	
38	25	27	27	16	20	87	109	8	15	
20	18	36	23	30	12	108	110	4	8	
20	27	27	26	17	17	54	60	5	8	
8	12	14	20	9	10	32	25	1	2	
29	36	40	33	21	22	86	75	.....	1	
17	17	25	9	11	5	46	34	.....	3	
5	8	10	6	6	2	20	19	1	3	
4	5	.....	4	3	1	9	9	.....	1	
22	14	27	19	13	10	57	62	7	3	
14	12	30	20	15	11	57	62	11	12	
81	91	129	116	77	64	325	328	17	22	
9	12	10	7	10	19	31	10	11	2	
68	52	71	64	50	26	225	179	26	18	
15	16	17	18	9	8	45	40	3	8	
8	4	8	8	4	2	9	12	.....	1	
13	16	14	14	11	12	36	35	4	4	
21	26	25	32	23	22	78	89	9	10	
5	7	12	5	10	4	24	27	3	4	
6	2	5	11	6	4	13	19	.....	.....	
5	6	7	13	5	4	26	19	1	1	
.....	.....	.....	.....	1	3	2	5	2	1	
136	155	116	130	107	82	171	132	25	48	
.....	.....	.....	.....	1	.....	3	2	.....	1	
20	24	31	32	18	11	64	81	5	4	
13	21	33	13	9	12	49	56	5	2	
4	4	8	4	2	5	6	11	.....	1	
40	52	81	60	35	26	89	118	6	5	
17	19	25	24	17	10	44	48	.....	5	
23	30	42	51	14	19	55	79	8	9	
40	41	38	31	12	9	74	82	11	5	
842	924	1,077	1,002	671	558	2,427	2,426	224	258	

2-3 EDWARD VII., A. 1903

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF

Indians.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Brought forward	2,807	2,699	133	3,328	3,424	118	80	232	395
Ojibbewas of Lake Huron at:—									
Thessalon River	144				144				
Maganettawan	111				111				
Spanish River No. 1	218	6			212				
" " 2	103	27			76				
" " 3	346				346				
Whitefish Lake	160			15	145				
Mississagi River	161				161				
Point Grondin	55			7	48				
Serpent River	121				121				
French River									
Tahgaiwinini	194				194				
Whitefish River	93	58			35				
Parry Island	108			50	36				22
Shawanaga	109			79	30				
Henvey Inlet	166			47	119				
Lake Nipissing	200				200				
Temogaming	86				86				
Dokis	80				80				
Garden River	436	140		1	295				
Batchewana Bay	362	5		8	349				
Six Nations on the Grand River	4,050	1,489		641		808	6	183	923
Wyandottes of Anderdon	2								
Chippewas and Saulteaux of Treaty No. 3, at:—									
Hungry Hall No. 1	31	7							24
" 2	17	2			1				14
Long Sault, No. 1	30	6							24
" 2	48	7							41
Manitou Rapids, No. 1	79								79
" 2	31								31
Little Forks	49	3							46
Couchiching	130	3			103				24
Stangecoming	49	1							48
Niacatchewenin	58								58
Nickickonsemenecanning	55	1			6				48
Rivière la Seine	127								127
Lac la Croix	111				3				108
Lac des Mille Lacs	82				1				81
Kawaiagamot (Sturgeon Lake)	32								32
Wabigoon	88	1			4				83
Frenchman's Head	147	120			19				8
Lac Seul	362	303			26				33
Wabuskang	67	31			10				26
Grassy Narrows	114	9			66				39
Eagle Lake	73	4			6				63
The Dalles	63	25			25				13
Islington	166	154			1				11
Rat Portage	66	5			9				52
Northwest Angle No. 37	95	3			1				91
" 33	54								54
" 34	18								18
Big Island	156	1			2				153
Assabasca	154	1			3				150
Whitefish Bay	52	1			10				41
Shoal Lake No 40	62				1				61
Carried forward	20,578	5,112	133	4,176	6,509	926	86	415	3,021

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

ONTARIO—*Continued.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
842	924	1,077	1,002	671	558	2,427	2,426	224	258	
5	6	17	14	11	10	28	44	6	3	
9	11	7	11	5	9	26	32	1	.....	
16	15	30	22	19	20	37	49	6	4	
9	6	13	13	8	7	20	24	2	1	
29	28	36	51	17	20	72	87	3	3	
9	17	23	17	10	2	30	44	6	2	
9	13	16	15	12	18	28	39	6	5	
4	4	6	4	3	2	10	16	1	5	
14	11	13	11	7	9	24	24	2	6	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Reserve not occupied.
13	15	28	32	13	8	37	45	2	1	
10	8	11	15	2	4	22	16	1	4	
8	7	15	7	4	4	26	34	2	1	
10	8	11	15	4	2	25	34	.....	.....	
13	9	19	12	5	6	47	54	.....	1	
21	17	21	23	6	8	45	59	.....	.....	
6	6	5	5	5	2	22	35	.....	.....	
5	7	7	7	4	2	19	26	1	2	
27	34	46	37	23	32	105	110	10	12	
29	27	26	18	27	23	91	102	10	9	
249	317	416	396	223	183	1,086	1,012	89	79	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Religion unknown ; no details.
1	2	6	2	1	1	8	10	.....	.....	
.....	2	.....	2	.....	1	4	8	.....	.....	
2	3	1	5	1	1	8	7	1	1	
2	5	3	3	2	4	12	15	1	1	
6	7	6	7	7	5	19	20	.....	2	
1	4	5	1	1	2	8	5	2	2	
4	3	2	4	3	6	12	11	1	3	
8	11	16	10	4	7	32	34	4	4	
4	3	6	13	1	3	8	10	1	.....	
5	8	10	6	1	3	10	14	.....	1	
6	5	10	7	2	2	9	13	.....	1	
8	11	14	20	8	6	20	31	7	2	
9	6	14	16	4	10	14	32	4	2	
4	10	10	14	4	11	13	15	.....	1	
6	1	5	2	.....	1	7	6	1	3	
3	8	6	11	7	3	20	28	1	1	
21	15	15	17	4	5	33	32	2	3	
37	44	49	42	20	9	80	71	6	4	
8	10	3	11	1	2	13	16	1	2	
9	15	10	7	6	5	28	30	3	1	
11	8	10	5	2	2	17	16	2	.....	
4	6	9	5	1	2	16	16	1	3	
20	12	14	16	7	7	46	38	1	5	
9	3	7	4	1	2	15	18	3	4	
4	6	11	15	5	4	20	26	1	3	
6	4	5	8	.....	2	12	12	1	4	
.....	2	1	1	.....	.....	5	8	.....	1	
20	13	21	17	9	4	32	35	1	4	
12	15	13	16	5	9	35	41	3	5	
3	2	4	7	3	3	12	17	1	.....	
8	3	11	6	4	3	11	15	.....	1	
1,578	1,737	2,140	2,027	1,193	1,054	4,806	4,962	421	460	

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF

Indians.	Census Return.	Religion. Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Brought forward	20,578	5,112	133	4,176	6,569	926	86	415	3,021
Chippewas and Saulteaux of Treaty No. 3, at—*Con.*									
Shoal Lake No. 39	83	1			1				81
Indians at Ignace	73				60				13
" in unorganized territory at Osnaburg House, Fort Hope, Martin Falls and English River	249								
Total	20,983	5,113	133	4,176	6,570	926	86	415	3,115

PROVINCE OF

Abenakis of St. Francis	344	52			260			32	
" Becancour	51				51				
Algonquins of River Desert	390				390				
" Temiscaming	205				205				
Amalecites of Viger	101				101				
Hurons of Lorette	458	1	3		454				
Iroquois of Caughnawaga	2,017	2		31	1,984				
" St. Regis	1,386			150	1,236				
Iroquois and Algonquins of Lake of Two Mountains	454			265	185		4		
Micmacs of Maria	105				105				
" Restigouche	476				476				
Indians of Labrador Peninsula, viz:— Montagnais and Naskapees at—									
Bersimis	465				465				
Escoumains	40				40				
Natashquan	43				43				
Godbout	40				40				
Grand Romaine and Musquaro	306				306				
Lake St. John	508	32			476				
Mingan	132				132				
Seven Islands and Moïse	377				377				
Têtes de Boule Indians of St. Maurice, County of Champlain	203								
Pontiac, unorganized	631								
Ottawa County	116								
Unorganized Territories of Three Rivers and St. Maurice	360								
Unorganized Territories of Chicoutimi and Saguenay	1,253								
Quebec County at—									
St. Ambroise	346								
Lorette	9								
Unorganized	13								
Charlevoix County at—									
St. Urbain	7								
Point au Pic	6								
Total	10,842	87	3	446	7,326		4	32	

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

ONTARIO—*Concluded.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
1,578	1,737	2,140	2,027	1,193	1,054	4,806	4,962	421	460	
11	12	7	6	3	3	17	22	1	1	
9	5	8	6	5	1	15	18	5	1	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Stragglers.
1,598	1,754	2,155	2,039	1,201	1,058	4,838	5,002	427	462	

QUEBEC.

26	35	40	37	16	15	79	77	9	10	
1	1	3	.....	5	4	12	19	1	5	
21	28	36	40	30	32	94	98	5	6	
13	17	29	27	13	9	39	49	4	5	
3	5	13	12	15	11	13	29	.....	....	
51	42	51	47	32	28	97	96	6	8	
177	149	232	176	118	105	504	450	43	63	
162	167	150	139	73	87	270	268	36	34	
40	35	54	31	17	23	135	105	8	6	
9	15	15	10	5	6	21	20	2	2	
36	48	51	44	33	36	102	98	13	15	
39	52	49	50	30	33	106	93	6	7	
5	4	3	5	1	1	8	8	2	3	
7	2	8	3	2	3	9	9	.....	...	
...	....	...	.....	...	...	.....	...	.....	...	No details.
35	41	41	35	15	14	56	62	5	2	
48	37	63	68	39	36	111	90	10	6	
10	14	14	11	5	10	32	32	2	2	
33	53	46	35	28	17	77	75	5	8	
.....	...	...	.....	...	...	....	...	.....	...	Stragglers.
....	.	...	.....	...	...	....	....	.....	..	"
...	.....	...	....	..	....	.....	....	...	..	"
.....	. ...	...	.. ..	...	.....	...	....	.. .	...	"
.....	.....	.....	.	....	....	. ...	...	.....	.....	"
.....	...	..	.....	..	....	.....	.	.....	.....	"
.....	....	.....	...	.....	.....	. ...	... ..	.....	...	"
..	....	.....	...	.....	.....	....	... ..	.....	.....	"
....	....	.....	.....	....	....	... .	..	..	... ..	"
..	.....	...	.....	.....	...	...	... ..	...	. ...	"
716	745	898	770	477	470	1,765	1,678	157	182	

2-3 EDWARD VII., A. 1903

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF

Indians.	Census Return.	Religion. Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Micmacs of Kent County at :—									
Big Cove	283	...	...	...	283	...	...	...	...
Indian Island	34	...	...	...	34	...	...	...	...
Buctouche	27	...	...	...	27	...	...	...	...
Micmacs of Northumberland County at:—									
Burnt Church	220	...	...	...	220	...	...	...	...
Eel Ground	144	...	...	...	144	...	...	...	...
Red Bank	49	...	...	...	49	...	...	...	...
Micmacs of Gloucester County at Bathurst	36	...	...	...	36	...	...	...	...
Micmacs of Restigouche County at Eel River	48	...	...	...	48	...	...	...	...
Micmacs of Westmoreland County at Fort Folly (reserve) and vicinity	73	...	...	...	73	...	...	...	...
Amalecites of York County at :—									
St. Mary's	123	...	...	...	123	...	...	...	...
Kingsclear	109	...	...	...	109	...	...	...	...
Amalecites of Carleton County at :—									
Woodstock	66	...	...	...	66	...	...	...	...
Amalecites of St. John County	15	...	...	...	15	...	...	...	...
" Charlotte County	22	...	...	...	22	...	...	...	...
" King's County at Apohaqui	29	...	...	...	29	...	...	...	...
Micmacs of King's County at :—									
Norton Station	30	...	...	...	30	...	...	...	...
Amalecites of Sunbury County at :—									
Oromocto	64	...	...	...	64	...	...	...	...
Amalecites of Queen's County at :—									
Upper and Lower Gagetown	26	...	...	...	26	...	...	...	...
Amalecites of Victoria County at :—									
Tobique	200	...	...	...	200	...	...	...	...
Amalecites of Madawaska County at :—									
Edmundston	46	...	...	...	46	...	...	...	...
Total	1,644	...	...	...	1,644	...	...	...	...

PROVINCE OF

Micmacs of Pictou County at :—									
Fisher's Grant (reserve)	112	...	...	...	112	...	...	...	...
Chapel Island (reserve)	37	...	...	...	37	...	...	...	...
Micmacs of Colchester County at :—									
Millbrook (reserve)	103	...	...	...	103	...	...	...	...
Carr's Brook	6	...	...	...	6	...	...	...	...
Micmacs of Shelburne County at :—									
Jordan River	17	...	...	...	17	...	...	...	...
Shelburne River	9	...	...	...	9	...	...	...	...
Sable River	14	...	...	...	14	...	...	...	...
Clyde River	2	...	...	...	2	...	...	...	...
Barrington River	7	...	...	...	7	...	...	...	...
Milton	8	...	...	...	8	...	...	...	...
Port Mouton (Queen's County temporarily.)	11	...	...	...	11	...	...	...	...
Caledonia (Queen's County temporarily.)	2	...	...	...	2	...	...	...	...
Port Joli (Queen's County temporarily.)	2	...	...	...	2	...	...	...	...
United States	7	...	...	...	7	...	...	...	...
Carried forward	337	...	...	...	337	...	...	...	...

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

NEW BRUNSWICK.

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
20	24	33	31	8	7	78	70	5	7	
1	3	6	6	1	.....	7	7	1	2	
1	2	2	3	1	3	7	6	1	1	
11	19	26	23	7	8	59	50	7	10	
12	11	11	12	5	4	47	33	6	3	
3	2	5	5	2	1	14	14	1	2	
2	3	4	5	1	1	6	9	3	2	
3	3	6	8	1	3	10	14	.....	.....	
4	6	10	9	5	4	17	14	2	2	
13	19	12	8	3	3	31	29	3	2	
9	7	20	9	3	7	25	26	1	2	
9	8	4	8	3	3	14	14	1	2	
2	1	2	2	...	1	2	4	.....	1	
2	2	1	2	2	2	5	6	...	.....	
2	5	5	1	1	1	6	7	1	.....	
3	1	4	2	4	5	4	6	.	1	
8	6	9	6	4	.....	16	13	1	1	
1	3	2	3	2	1	5	7	2	.....	
18	15	17	21	8	6	55	50	5	5	
4	6	7	6	2	3	5	7	5	1	
128	146	186	170	63	63	413	386	45	44	

NOVA SCOTIA.

10	3	9	8	16	17	21	26	2	.....	
3	3	4	5	5	3	3	8	3	.....	
6	5	14	15	7	5	26	25	5	1	
3	4	5	9	8	6	23	16	2	3	
22	15	32	37	36	31	73	75	12	4	

CENSUS RETURN of Resident and Nomadic Indians ;

PROVINCE OF NOVA

Indians.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Brought forward..	337				337				
Micmacs of Inverness County at :—									
Whycocomagh (reserve)	133				133				
Malagawatch (reserve)	32				32				
Micmacs of Annapolis County at :—									
Lequille	24				24				
Bridgetown	4				4				
Paradise	15				15				
Lawrencetown	6				6				
Middleton	28				28				
Micmacs of Digby County at :—									
Bear River (reserve)	95				95				
Weymouth	27				27				
Micmacs of King's County at :—									
Cambridge (reserve)	10				10				
Berwick	7				7				
Kentville	20				20				
Beaver Brook	5				5				
Black Rock	10				10				
Gaspereaux	8				8				
Kingston	11				11				
Micmacs of Queen's County at :—									
Milton	54				54				
Mill Village	11				11				
Wild Cat (reserve)	13				13				
Greenfield	8				8				
Micmacs of Hants County at :—									
Indian Brook (reserve)	91				91				
Micmacs of Cumberland County at :—									
Franklin Manor (reserve) and vicinity	69				69				
Springhill Junction and vicinity	15				15				
Amherst	2				2				
Oxford	2				2				
East Southampton	7				7				
Micmacs of Antigonish County at :—									
Summerside	23				23				
Afton (reserve)	80				80				
Pomquet (reserve)	49				49				
Micmacs of Guysborough County at :—									
Guysborough	60				60				
Micmacs of Lunenburg County at :—									
New Germany (reserve)	56				56				
Bridgewater	16				16				
Lunenburg Town	11				11				
Gold River (reserve)	9				9				
Micmacs of Richmond County at :—									
Chapel Island (reserve)	121				121				
Micmacs of Victoria County at :—									
Middle River (reserve)	103				103				
Micmacs of Cape Breton County	250				250				
Micmacs of Halifax County at :—									
Sheet Harbour	36				36				
Cole Harbour (reserve) Cow Bay	18				18				
Elmsdale, Wellington, Bedford and Windsor Junction	108				108				
Micmacs of Yarmouth County	83				83				
Total	2,067				2,067				

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

SCOTIA—*Continued.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
22	15	32	37	36	31	73	75	12	4	
10	6	17	17	15	12	32	20	1	3	
....	.. .	8	6	2	1	7	8	.....	.....	
3	3	10	15	4	2	16	22	...	2	
9	11	16	9	9	7	21	24	8	8	
5	6	6	10	6	6	15	16	1		
2	2	8	9	9	4	11	6	1	2	
1	.....	.....	1	4	5	.....	.....	.....	.....	
1	2	... ..	1	. ...	.....	4	4	.. .	1	
2	.....	.. ...	.	.....	1	2	3	....	.... .	
9	8	5	10	7	2	21	21	5	3	
10	3	7	8	6	5	13	13	2	2	
1	1	3	1	1	2	3	3	.....	.....	
.....	... .	.....	...	...	.....	.....	.....	1	1	
.....	...	. .	.	.....	... ..	.....	.....	1	1	
.. ...	1	.....	. ..	.....	... ..	2	3	1	. ..	
15	15	21	28	15	16	45	40	10	7	
4	6	4	5	5	4	14	12	1	1	
1	1	2	2	2	2	3	3	.....	. ....	
1	1	1	1	1	1	3	2	.....	.....	
. ....	.....	1	1	....	.... .	3	3	.....	1	
6	11	16	9	7	11	29	25	4	3	
10	8	16	14	3	4	25	20	2	1	
22	26	30	32	30	32	30	32	3	5	Ages of 8 persons not given.
3	3	7	2	.....	5	8	7	.. ...	1	
2	.....	1	1	1	1	5	5	1	1	
7	5	18	10	11	1	27	25	1	3	No details.
.....	.....	.....	. ..	... ..	.....	.....	.....	... .	..	
146	134	229	229	174	155	412	392	55	50	

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF PRINCE

Indians.	Census Return.	Religion. Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Micmacs of Prince County at:—									
Lennox Island (reserve)	256				256				
Micmacs of King's County at:—									
Morell (reserve)	60				60				
Total	316				316				

PROVINCE OF BRITISH

COWICHAN AGENCY.									
Sooke	23				23				
Cheerno	48				48				
Esquimalt	15			11	4				
Songhees	106			36	69				1
Malakut	14				14				
Tsehump	24				24				
Panquechin	62				62				
Tsartilp	64				64				
Tsanout	103				103				
Kilpanlus	4				4				
Comiakin	70				70				
Clemclemalets	142			25	117				
Khenipsim	55			11	44				
Koksilah	14				14				
Quamichan	295			50	200				45
Somenos	112			20	92				
Hellelt	29			9	9				11
Siccameen	36				36				
Kulleets	68				68				
Lyacksum	86				86				
Lilmalche	18				18				
Penelakut	150				150				
Tsussie	54				54				
Nanaimo	165			165					
Snonowas	13			5					8
Qualicum	13			13					
Comox	59		57		2				
Galiano Island	31				31				
Mayne Island	27				27				
Discovery Island	32				32				
Cowichan Lake	2			2					
Total	1,934		57	347	1,465				65
NORTHWEST COAST AGENCY.									
Haida Nation—									
Massett	370	370							
Skidegate	264			264					
Nishgar Nation—									
Kincolith	267	267							
Kittex	28								28
Carried forward	929	637		264					28

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

EDWARD ISLAND.

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
36	40	25	20	22	17	44	43	5	4	
10	10	5	5	1	3	10	12	2	2	
46	50	30	25	23	20	54	55	7	6	

COLUMBIA.

2	....	3	5	....	.....	6	5	.....	2	
4	3	4	3	.....	2	13	18	.....	1	
.....	.....	2	3	.....	.....	4	6	.....	.....	
11	12	11	10	....	1	30	31	.....	.....	
.....	....	2	3	.....	.....	3	5	.....	1	
1	1	2	2	.....	.....	8	9	1	.....	
7	4	.....	.....	7	4	16	24	.....	.....	
1	5	16	10	.....	.....	16	16	.....	.....	
7	9	17	18	.....	.....	24	28	.....	.....	
.....	.....	.....	.....	.....	.....	1	1	1	1	
4	2	3	6	.....	.....	26	26	1	2	
8	10	21	14	2	.....	43	44	.....	.....	
3	3	2	1	3	4	20	19	.....	.....	
1	....	2	1	.....	.....	5	5	.....	.....	
26	27	33	31	2	.....	86	90	.....	.....	
18	18	9	7	3	4	26	27	.....	.....	
4	4	1	2	.....	.....	8	10	.....	.....	
2	2	4	8	.....	.....	10	10	.....	.....	
6	6	8	6	.....	.....	20	22	.....	.....	
12	15	10	7	1	2	19	20	.....	.....	
3	1	2	.....	.....	.....	6	6	.....	.....	
22	13	9	9	.....	.....	48	46	1	2	
8	6	6	6	1	3	12	12	.....	.....	
21	22	17	17	10	12	28	38	....	.....	
1	.....	1	....	.....	...	4	7	.....	.....	
1	.....	.....	2	2	.....	4	4	.....	.....	
3	2	2	3	4	4	22	19	....	.....	
4	5	1	1	4	....	8	8	.....	.....	
3	4	4	2	2	2	5	5	.....	.....	
6	5	4	3	.....	.....	6	8	.....	.....	
.....	.....	.....	.....	.....	.....	1	1	.....	.....	
189	179	196	180	41	38	528	570	4	9	
33	32	28	27	24	24	88	87	13	14	
18	18	17	18	17	16	74	72	6	8	
19	18	21	20	14	12	76	76	6	5	
2	1	2	1	2	1	9	8	1	1	
72	69	68	66	57	53	247	243	26	28	

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF BRITISH

Indians.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
NORTHWEST COAST AGENCY—*Con.*									
Brought forward	929	637		264					28
Nishgar Nation—									
Lackalsap	183			183					
Kitangata	30								30
Kitwintshilth	61								61
Aiyansh	134	134							
Kitlacdamax	139								139
Tsimpsean Nation—									
Port Simpson	718			718					
Metlakatla	206	206							
Kitkatla	225	225							
Kitkaata	79			79					
Kitsumkalum	69			69					
Kitsalas	144			144					
Oweekayno Nation—									
Kitamatt	262			262					
Kitlope	85			85					
China Hat	115			115					
Bella Bella	330			330					
Oweekayno	129			20					109
Tallion Nation—									
Kinisquit	75								75
Bella Coola	192			40					152
Tallion	44								44
Total	4,149	1,202		2,309					638
KAMLOOPS OKANAGAN AGENCY.									
Adam's Lake	187				187				
Ashcroft	50	50							
Bonaparte	159				159				
Boothroyd	159	156			3				
Boston Bar	159	89			70				
Cook's Ferry	204	204							
Deadman's Creek	113				113				
Kamloops	241				241				
Kanaka Bar	56	56							
Lytton	463	463							
Nicomen	48	48							
Nicola (Lower)	364	210			154				
Nicola (Upper)	186				186				
Neskainlith	152				152				
North Thompson	129				129				
Okanagan	236				235				1
Oregon Jack Creek	20	20							
Osoyoos	63				63				
Penticton	145				145				
Little Lake, Shuswap	82				82				
Similkameen (Lower)	130				130				
Similkameen (Upper)	50				50				
Siska Flat	32	32							
Spallumcheen	135				135				
Spuzzum	159	68			91				
Coldwater	112				112				
Total	3,834	1,396			2,437				1

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

COLUMBIA—*Continued.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
72	69	68	66	57	53	247	243	26	28	
18	17	18	18	14	13	38	35	5	7	
12	1	3	3	2	2	8	7	1	1	
3	4	4	5	2	3	19	18	1	2	
11	12	11	10	10	9	32	32	4	3	
6	5	6	6	5	5	48	50	4	4	
74	75	63	64	43	42	161	162	17	17	
24	21	16	15	11	10	54	51	1	3	
12	13	18	17	11	10	65	64	7	8	
5	4	8	7	5	4	22	21	1	2	
8	9	9	8	4	4	13	12	1	1	
13	12	12	11	9	8	38	38	1	2	
13	12	20	20	17	15	77	76	6	6	
5	5	6	5	6	6	24	23	2	3	
11	12	13	12	9	8	25	23	1	1	
31	31	26	26	20	19	82	81	7	7	
6	6	6	5	7	8	44	43	2	2	
4	3	4	4	3	3	27	25	1	1	
10	9	16	15	9	8	60	59	3	3	
4	3	4	4	2	2	12	12	1	.....	
332	323	331	321	246	232	1,096	1,075	92	101	
13	15	18	19	8	8	54	52	.....	.....	
3	3	3	3	2	2	15	15	2	2	
15	14	14	14	5	5	42	45	2	3	
15	15	7	10	5	4	50	44	3	6	
11	10	14	15	4	4	49	48	2	2	
15	15	14	15	5	7	57	70	2	4	
10	10	12	10	7	6	24	27	3	4	
19	18	21	17	9	8	64	64	10	11	
4	3	5	4	3	2	16	15	2	2	
36	37	38	41	22	26	122	115	13	13	
4	4	3	5	2	2	14	14	.....	.....	
23	24	30	28	19	18	102	96	11	13	
16	15	14	12	9	9	48	48	7	8	
13	12	11	10	5	5	48	38	3	7	
10	10	11	11	10	9	34	30	2	2	
12	12	15	14	11	10	71	79	8	4	
2	2	2	2	....	....	5	5	1	1	
2	5	5	5	3	2	19	20	1	1	
17	17	18	15	9	7	31	30	1	.....	
9	8	8	9	2	2	20	20	2	2	
8	8	12	11	6	6	35	36	6	2	
4	3	3	3	2	2	15	14	2	2	
....	1	2	3	1	.....	14	9	1	1	
13	14	13	12	8	8	32	31	2	2	
12	13	13	14	5	6	43	49	2	2	
10	10	11	10	5	5	25	25	5	6	
296	298	317	312	167	163	1,049	1,039	93	100	

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF

Indians.	Census Return.	Religion. Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
KWAWKEWLTH AGENCY.									
Tsawantieneuk	234	234							
Mah-Mahillikulla	117	117							
Tanahtenk	96								96
Klawitsis	60								60
Mahtilpi	59	59							
Kwawkewlth	84	84							
Kwiahkah	25	25							
Nuwitti	75								75
Kwatsino	25								25
Koskimo	78								78
Nahwahta	110								110
Nimkish	143	143							
Kwawshela	37								37
Wawlitsum	53								53
Wiwaiaikum	67								67
Wiwaiaikai	96			96					
Total	1,359	662		96					601
BABINE AND UPPER SKEENA RIVER AGENCY.									
Kitwangar	151	146							5
Kitwancool	66	60							6
Kitsegukla (old and new village)	87			73				10	4
Getanmax (Hazelton)	239	212						20	7
Kispyox	206			195					11
Kisgegas	246	174						26	46
Kuldoe	38			20					18
Moricetown (Lachalsap)	158				158				
Hagwilget Village	160				160				
Fort Babine	148				148				
Old Fort Babine	142				142				
Yucutee (Portage between Babine and Stuart Lake)	17				17				
Tache	53				53				
Grand Rapids	20				20				
Tsisthainli (Lac Trembleur)	13				13				
Pintce	43				43				
Stuart's Lake Village	178				178				
Fraser's Lake Village	53				53				
Stony Creek Village	101				101				
Fort George Village	125				125				
Tsistlatho (Black Water)	74				74				
McLeod's Lake	93				93				
Fort Grahame (Nomadic)	95				95				
Connolly Lake "	121				121				
Na-anees (two bands north of Connolly Lake, Semi-Nomadic)	156				156				
Glen Vowell	73							73	
Stella	42				42				
Total	2,898	592		288	1,792			129	97

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

BRITISH COLUMBIA—*Continued.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
18	24	20	14	10	.....	74	58	2	14	
6	9	4	4	3	1	49	32	2	7	
6	10	5	4	6	1	33	28	2	1	
2	3	3	1	1	.....	23	20	4	3	
2	5	3	4	1	1	21	15	3	4	
13	8	4	4	2	.....	24	19	6	4	
1	1	2	2	1	.. ..	8	8	1	1	
7	6	2	5	3	.. .	27	21	... ..	4	
.....	1	....	.....	.. ..	.....	9	13	.....	2	
.. ...	1	1	1	2	.....	27	26	8	12	
16	3	4	8	2	4	37	34	.....	2	
16	11	4	8	4	1	50	43	.....	6	
6	2	3	1	1	.....	11	11	1	1	
4	3	3	7	.....	1	18	17	.....	.....	
5	2	4	2	.....	1	27	26	.....	.....	
9	3	3	12	2	4	33	30	... ..	.....	
111	92	65	77	38	14	471	401	29	61	
7	9	13	11	5	8	43	47	3	5	
6	7	6	8	2	3	15	16	3	.....	
10	7	8	6	6	2	20	20	5	3	
8	7	14	21	13	18	73	75	8	2	
9	8	17	15	8	6	66	67	4	6	
13	12	22	21	8	10	69	73	8	10	
4	3	4	5	.....	1	8	7	2	4	
8	12	13	13	6	9	45	44	5	3	
9	12	11	12	8	6	45	48	6	3	
7	9	12	15	7	3	48	47	.. ...	.....	
8	9	14	16	6	8	39	41	1	.....	
1	1	2	3	1	1	4	4	.....	... ..	
8	7	4	5	3	2	10	12	1	1	
5	3	2	.....	2	2	3	3	.....	.....	
1	.....	2	1	1	1	4	3	.....	.. ...	
3	4	4	3	3	2	10	12	1	1	
6	8	17	18	7	6	55	54	4	3	
4	3	6	8	6	5	9	10	1	1	
5	4	8	10	9	10	27	24	1	3	
6	4	11	13	9	7	35	36	2	2	
4	3	7	6	6	4	22	21	. ....	1	
7	6	12	12	8	10	18	18	1	1	
5	7	9	11	5	6	25	24	2	1	
6	5	8	10	11	13	34	32	1	1	
9	8	14	15	10	8	42	43	5	2	
7	8	8	12	2	.....	17	18	.....	1	
3	3	5	6	3	4	8	9	1	... .	
169	169	253	276	155	155	794	808	65	54	

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF BRITISH

Indians.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
WILLIAMS LAKE AGENCY.									
Alexandria	62				62				
Alkali Lake	158				158				
Anaham	218				218				
Anderson Lake	66				66				
Bridge River	108				108				
Canoe Creek	157				157				
Cayoosh Creek No. 1	34				34				
" No. 2	15	15							
Clinton	46				46				
Dog Creek	16				16				
Fountain	201				201				
High Bar	51				51				
Kenim Lake	87				87				
Lillooet No. 1	68				68				
" No. 2	4	4							
Pavilion	68				68				
Quesnel	69				69				
Seton Lake Mission No. 1	72				72				
" Enias No. 2	1				1				
" Schloss No. 5	34				34				
" Niciat No. 6	52				52				
Soda Creek	81				81				
Stones	106				106				
Toosey	63				63				
Williams Lake	148				148				
Total	1,985	19			1,966				
FRASER RIVER AGENCY.									
Aitchelitz	7			7					
Burrard Inlet, No. 3 reserve	30				30				
Cheam	100			1	99				
Chehalis	112	5			107				
Clahoose	72				72				
Coquitlam	25				25				
Douglas	75				75				
Ewa-woos	27				27				
False Creek	52				52				
Homalko	86				86				
Hope	87	2		1	84				
Katsey	78				78				
Kapilano	45				24				21
Kwawkwawapilt	16				16				
Langley	39				39				
Mission (Burrard Inlet)	170				170				
Musqueom	98			10	85				3
Matsqui	46				46				
New Westminster	65				65				
Nicomen	16				16				
Ohamil	57	9		3	45				
Pemberton Meadows	261				261				
Popcum	14	14							
Semiahmoo	30				30				
Sechelt	236				236				
Carried forward	1,844	30		22	1,768				24

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

COLUMBIA—*Continued.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
6	5	4	4	5	5	14	14	3	2	
18	18	7	8	12	16	32	38	5	4	
30	16	12	8	14	16	44	40	20	18	
6	6	3	3	5	7	18	16	1	1	
13	13	5	4	9	7	27	25	2	3	
14	14	7	6	15	17	34	38	3	9	
3	3	2	2	5	4	7	4	2	2	
3	1	2	.....	5	2	.....	2	.....	.....	
4	4	3	2	5	5	9	10	2	2	
3	1	1	.....	2	3	2	2	1	1	
19	23	6	9	18	18	45	50	6	7	
6	5	3	3	5	5	10	8	3	3	
8	8	3	4	5	5	26	25	2	1	
6	5	4	3	3	4	22	20	1	....	
.....	.....	1	.....	1	.....	1	1	.....	.....	
5	5	2	4	7	8	14	18	3	2	
9	6	3	2	6	5	16	13	5	4	
10	10	4	2	6	6	18	11	3	2	
.....	.....	.....	.....	.....	.....	1	.....	.....	.....	
3	4	2	1	3	3	7	8	2	1	
5	5	3	2	5	3	13	13	2	1	
9	8	3	3	4	6	20	23	2	3	
11	16	2	4	8	9	25	27	3	1	
9	10	1	3	5	6	13	10	2	1	
13	15	5	8	7	10	38	40	7	5	
213	201	91	85	160	170	456	456	80	73	
.....	.....	.....	.....	.....	.....	3	3	.....	1	
2	1	3	4	.....	.....	10	9	....	1	
9	10	10	9	8	8	20	20	3	3	
16	12	3	3	5	2	31	30	7	3	
11	7	8	6	2	2	15	15	2	4	
4	3	3	3	1	.....	6	5	.....	....	
4	3	6	6	1	3	22	25	2	3	
1	2	2	3	.....	.....	5	8	3	3	
2	3	3	1	4	1	17	16	2	3	
9	12	7	8	4	3	21	20	1	1	
6	4	7	6	3	3	26	28	3	1	
6	15	5	5	.....	1	21	20	2	3	
3	3	1	1	2	1	15	15	2	2	
2	1	.....	.....	1	1	5	4	.....	2	
4	2	2	2	1	.....	11	11	3	3	
29	19	15	10	6	8	38	41	2	2	
7	6	9	9	7	6	21	20	9	4	
6	6	6	6	1	1	8	8	2	2	
7	8	4	4	5	3	16	16	1	1	
2	1	1	2	.....	.....	4	5	.....	1	
7	6	3	7	.....	1	17	14	2	.....	
23	38	28	21	9	7	61	63	6	5	
3	.....	4	.....	1	1	2	3	.....	....	
1	1	3	3	1	1	9	9	1	1	
32	32	16	16	13	9	52	52	7	7	
196	195	149	135	75	62	456	460	60	56	

2-3 EDWARD VII., A. 1903

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF BRITISH

Indians.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
FRASER RIVER AGENCY—*Con.*									
Brought forward	1,844	30		22	1,768				24
Sumass	50			28	22				
Scowlitz	51				51				
Squiahla	14			2	12				
Skweahm	30				30				
Sliammon	102				102				
Squatits	42	12		10	20				
Sqwamish, Howe Sound	27				8				19
Skwah	100			4	96				
Skookum Chuck	98				98				
Samahquam	75				75				
Skulkayu	33			26	7				
Skwawahlooks	23				23				
Seymour Creek	44			3	32				9
Skway	26	3			23				
Texas Lake	35	2			33				
Tchewassan	45				45				
Tsoowahlie	49			39	10				
Tyeachten	43	6		20	17				
Wharnock	23				23				
Yukkweakwioose	26			4	22				
Yale	85	20			65				
Total	2,865	73		158	2,582				52
WEST COAST AGENCY.									
Ahousaht	273				2				271
Clayoquot	245			11	109				125
Checklesit	105				58				47
Ehatisaht	101			3					98
Ewlhwiehaht	155		67						88
Hesquiaht	162				162				
Howchuklisat	45				7				38
Kelsemaht	69			9	7				53
Kyuquot	305				157				148
Matchitlaht	64				21				43
Mooachtaht	175				82				93
Nitinaht	209			127					82
Noochahtlaht	74				24				50
Oiaht	159		86						73
Opitchesaht	62		49		2				11
Pacheenaht	56								56
Toquaht	23		5						18
Tsesaht	132		80						52
Total	2,414		287	150	631				1,346
KOOTENAY AGENCY.									
St. Mary's	206				206				
Tobacco Plains	56				56				
Lower Columbia Lake	72				72				
Lower Kootenay (Flat Bow)	172				172				
Kinbaskets (Shuswap Tribe)	56				56				
Total	562				562				

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

COLUMBIA—*Continued.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
196	195	149	135	75	62	456	460	60	56	
4	7	2	1	3	2	14	12	4	1	
4	6	7	5	3	1	10	11	1	3	
1	1	1	3	.....	.....	3	5	.....	.....	
2	6	2	2	.....	....	8	8	1	1	
16	9	13	11	.....	6	20	15	8	4	
3	3	4	2	4	1	9	10	3	3	
3	1	....	2	....	....	7	9	5	...	
8	6	9	14	5	6	24	21	3	4	
10	6	10	10	2	2	23	21	5	9	
6	6	6	9	4	5	15	18	4	2	
2	3	3	3	1	1	9	9	1	1	
1	5	.....	3	1	.....	6	5	1	1	
2	3	6	6	2	.....	13	12	....	....	
3	1	3	.....	.....	1	8	8	1	1	
3	4	2	7	1	2	8	6	1	1	
6	2	6	3	...	3	8	9	4	4	
3	6	4	5	2	2	12	11	2	2	
5	5	3	7	. .	1	9	10	2	1	
2	1	1	1	.....	1	8	7	1	1	
....	3	2	2	.....	2	7	6	1	3	
3	5	7	10	2	3	20	24	9	2	
283	284	240	241	105	101	697	697	117	100	
21	22	35	22	5	5	70	72	11	10	
11	14	15	20	10	8	68	80	8	11	
6	10	11	9	2	4	28	25	8	2	
12	7	5	10	4	1	28	29	2	3	
9	17	17	16	4	2	41	38	3	8	
20	10	20	15	2	3	38	44	4	6	
3	4	1	4	1	1	12	15	2	2	
3	6	6	4	3	4	17	19	3	4	
17	13	20	15	5	12	94	112	13	4	
5	4	5	4	..	1	20	22	2	1	
9	5	15	9	4	5	54	62	4	8	
13	15	12	26	5	6	54	63	8	7	
3	4	1	3	2	4	29	23	4	1	
12	10	14	18	2	4	44	47	4	4	
7	6	7	4	2	2	12	20	1	1	
4	2	8	6	1	....	12	16	3	4	
1	....	3	.....	1	2	5	5	4	2	
9	8	18	17	4	5	23	33	13	2	
165	157	213	202	57	69	649	725	97	80	
25	20	19	15	9	9	47	48	6	8	
1	4	2	6	3	1	15	17	3	4	
6	6	7	8	2	2	18	17	3	3	
16	22	16	12	8	9	41	43	4	1	
9	4	8	3	.....	4	9	13	5	1	
57	56	52	44	22	25	130	138	21	17	

CENSUS RETURN of Resident and Nomadic Indians;

PROVINCE OF

Indians.	Census Return.	Religion							
		Anglican.	Presbyterian	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Chippewas and Crees of Treaty No. 1 at:—									
Rosean River including rapids	218				100				118
Long Plain	114								114
Swan Lake and Indian Gardens at Hamilton's Crossing	103								103
St. Peter's	1,075	871			95	77		8	24
Brokenhead River	170	125			23				22
Fort Alexander	469	221			246				2
Sandy Bay	264	17			241				6
Total, Treaty No. 1	2,413	1,234			705	77		8	389
Sioux at Portage la Prairie	132		100						32
Chippewas and Crees of Treaty No. 2 at:—									
Lake Manitoba	103	21			76				6
Ebb and Flow Lake	60	1			56				3
Fairford	194	155			38				1
Little Saskatchewan	111	79				32			
Lake St. Martin	133	87				24			22
Crane River	54	11			7				36
Waterhen River	144				144				
Total, Treaty No. 2	799	354			321	56			68
Chippewas, Saulteaux and Crees of Treaty No. 3 at:—									
Buffalo Bay	35								35
Chippewas, Saulteaux and Crees of Treaty No. 5 at:—									
Black River	65	65							
Hollow Water River	99	49			15				35
Blood Vein River, Loon Straits	57								57
Fisher River	378			378					
Jackhead River	68	68							
Berens River	289			270	19				
Poplar River	147			147					
Norway House	570			570					
Cross Lake	313			295	18				
Grand Rapids (Berens River)	131								131
Pekangekum	107								107
Grand Rapids (Crees and Saulteaux)	113	113							
Chemawawin (Crees)	157	156							1
Moose Lake (Crees and Saulteaux)	127	126							1
The Pas	419	391			10			18	
Shoal Lake (Crees)	59	59							
Red Earth "	122	52							70
Cumberland "	154	144			10				
Total, Treaty No. 5	3,375	1,223		1,660	72			18	402

SESSIONAL PAPER No. 27

Denominations to which they belong, &c.—*Continued.*

MANITOBA.

Under 6 years.		From 6 to 15 yrs. inclusive.		From 16 to 20 yrs. inclusive.		From 21 to 65 yrs. inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
17	19	22	18	10	7	56	66	3	....	
5	8	7	9	4	3	33	44	.....	1	
6	3	11	12	4	3	29	34	1	.....	
107	120	116	92	51	54	276	251	1	7	
16	13	14	13	8	18	49	39	.....	.....	
59	49	34	30	23	15	125	132	.....	2	
20	24	23	27	25	30	50	53	5	7	
230	236	227	201	125	130	618	619	10	17	
19	9	18	16	7	3	25	26	4	5	
6	4	17	12	10	6	20	22	3	3	
1	6	8	10	4	.....	15	13	1	2	
17	13	19	17	9	15	45	43	13	3	
12	10	13	10	6	3	26	27	.....	4	
16	15	16	12	7	2	31	27	3	4	
9	2	7	2	4	4	11	14	1	.....	
21	18	13	16	5	9	32	30	.....	.....	
82	68	93	79	45	39	180	176	21	16	
3	1	1	1	4	3	10	9	.....	2	
4	7	6	5	5	3	7	14	7	7	
14	14	11	5	5	5	19	20	4	2	
5	2	8	2	5	6	9	17	.....	3	
34	45	42	39	30	26	80	77	3	2	
5	8	9	6	6	4	13	15	1	1	
28	33	39	43	31	9	55	42	8	1	
20	11	21	8	12	12	23	34	2	4	
42	61	56	67	39	32	105	140	18	10	
34	38	30	32	19	14	63	70	3	10	
12	10	23	9	15	5	24	27	2	4	
7	10	12	7	13	13	20	25	.....	.....	
8	4	20	17	13	6	19	25	1	.....	
16	17	16	14	12	4	29	38	4	7	
10	17	12	11	5	6	27	32	1	6	
51	56	32	46	27	16	84	89	8	10	
7	2	8	9	4	5	12	9	2	1	
15	16	16	14	5	3	24	22	3	4	
17	13	20	12	5	5	35	38	1	8	
329	364	381	346	251	174	648	734	68	80	

2-3 EDWARD VII., A. 1903

CENSUS RETURN of Resident and Nomadic Indians;

NORTHWEST

Indians.	Census Return.	Religion.						
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Treaty No. 4.									
BIRTLE AGENCY.									
Keeseekoowenin	149		93		56				
Waywayseecappo	169		56		36				77
Valley River	78		29		35				14
Gambler	15		2		13				
Rolling River	100		16		4				80
Birdtail (Sioux)	67		57	1					9
Oak River "	249	73	3						173
Oak Lake "	65		28						37
Turtle Moutain (Sioux)	10								10
Total	902	73	284	1	144				400
PELLY AGENCY.									
Coté	259	1	158		26				74
Keys	221	139	1		19				62
Keeseekouse	151	22	14		69				46
Total	631	162	173		114				182
MOOSE MOUNTAIN AGENCY.									
White Bear	199	1	12		15				171
CROOKED LAKE AGENCY.									
Ochapowace	110	2	7		20				81
Kahkewistahaw	107	5	16		20				66
Cowessess	156	1	16		132				7
Sakimay	185	4	15		18				148
Leech Lake (Little Bone's)									
Total	558	12	54		190				302
ASSINIBOINE AGENCY.									
Carry-the-Kettle	210		32		22				156
Sioux at Moosejaw (non-treaty)	120		3		1				116
Total	330		35		23				272
QU'APPELLE AGENCY.									
Little Black Bear	67		7		29				31
Star Blanket	39		1		6				32
Okanase	68		16		19				33
Peepeekeesis	57		4		25				28
Piapot	151		30		90				31
Pasquah	137		21		82				34
Muscowpetung	97	2	22		13				60
Standing Buffalo (Sioux)	215	4			97				114
Total	831	6	101		361				363

Denominations to which they belong, &c.—*Continued.*

TERRITORIES.

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
14	18	19	17	5	8	26	38	2	2	
20	16	16	19	4	8	35	42	7	2	
8	14	6	7	3	6	14	18	1	1	
2	2	2	.....	.....	.. .	4	5	.....	.....	
9	9	6	8	6	4	26	29	2	1	
4	9	6	9	1	2	14	21	1	.....	
16	20	28	26	7	13	65	57	7	10	
5	7	7	6	2	. . .	16	15	5	2	
.....	.....	2	.. . .	1	1	2	2	1	1	
78	95	92	92	29	42	202	227	26	19	
36	25	30	24	11	13	53	56	4	7	
23	23	18	26	9	11	44	51	6	10	
15	22	12	15	7	3	31	38	3	5	
74	70	60	65	27	27	128	145	13	22	
21	20	16	15	10	4	50	62	1	.....	Pheasant Rump and Striped Blanket Bands are now united with White Bear's Band.
9	7	13	9	1	2	31	36	.....	2	
9	4	11	15	2	2	26	31	3	4	
10	17	21	20	1	6	32	47	.....	2	
24	22	23	13	6	4	37	50	4	2	
... ..	...	.. ...	...	.....	.....	.....	... ..	.....	... ..	Unoccupied.
52	50	68	57	10	14	126	164	7	10	
14	19	15	10	19	18	44	52	9	10	
.....	.....	.....	..	.	...	...	.....	... ..	.....	No details.
14	19	15	10	19	18	44	52	9	10	
3	6	5	11	1	3	19	17	2	.....	
4	2	3	5	3	2	6	9	2	3	
2	9	11	9	3	1	13	14	3	3	
3	3	2	8	3	4	11	17	2	4	
16	11	10	6	12	7	30	46	7	6	
11	10	9	17	4	7	29	37	2	11	
8	13	6	6	5	4	17	29	6	3	
23	22	17	19	6	7	45	58	10	8	
70	76	63	81	37	35	170	227	34	38	

CENSUS RETURN of Resident and Nomadic Indians;

NORTHWEST

Indians	Census. Return.	Religion. Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
TOUCHWOOD HILLS AGENCY.									
Muscowequan	141				77				64
George Gordon	162	110			12				40
Day Star	73								73
Poor Man	95	3			7				85
Yellow Quill	310				1				309
Kinistino	71								71
Total	852	113			97				642
Pine Creek	92				92				
Shoal River (including Steep Point Rock, Swan Lake, Dog Island, Dawson Bay, ½ mile west of Shoal River	161	115			11				35
Total	253	115			103				35
Total Treaty No. 4	4,556	482	659	1	1,047				2,367
Treaty No. 6.									
DUCK LAKE AGENCY.									
One Arrow	86				59				27
Okemassis	25	4			21				
Beardy	139	4	11		85				39
John Smith	136	136							
James Smith	107	99			1				7
Cumberland	115	100			2				13
Total	608	343	11		168				86
CARLTON AGENCY.									
William Twatt	145	16	6		5				118
Petequakey	85	2	3		80				
Mistawasis	127	4	79		43				
Ahtahkakoop	208	190	4		10				4
Kapahawekenum	76	6			60				10
Kenemotayoo	103	56			18				29
Pelican Lake Indians	56	5			1				50
Pelican Narrows	376	132			244				
Wahspaton (Sioux, non-treaty)	103		33						70
James Roberts (Lac la Ronge)	476	457			19				
William Charles (Montreal Lake)	165	162			3				
Total	1,920	1,031	125		483				281
HOBBEMA AGENCY.									
Ermineskin	166			1	163				2
Samson	329			240	62				18
Louis Bull	71			58	6				7
Montana (Little Bear)	52			16	3				33
Total	609			315	234				60

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enominations to which they belong, &c.—*Continued.*

TERRITORIES—*Continued.*

Under 6 Years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
13	14	14	7	8	12	34	32	2	5	
17	15	11	9	9	6	44	36	7	8	
7	11	7	7	1	....	15	16	3	6	
11	17	3	6	1	4	21	24	3	5	
35	29	30	31	28	19	47	65	11	15	
16	13	5	7	1	2	11	14	1	1	
99	99	70	67	48	43	172	187	27	40	
6	10	12	13	6	4	18	20	1	2	
20	17	9	17	4	5	34	36	5	14	
26	27	21	30	10	9	52	56	6	16	
434	456	405	417	190	192	944	1,120	123	155	
10	2	15	10	5	10	12	18	2	2	
1	4	1	2	.....	1	7	9	...	.....	
15	18	12	15	2	8	30	35	3	1	
13	13	16	14	8	8	30	30	3	1	
11	14	14	7	6	10	22	19	3	1	
12	14	10	12	6	3	24	27	3	4	
62	65	68	60	27	40	125	138	14	9	
19	8	25	7	6	2	34	41	1	2	
10	7	11	7	6	3	15	21	3	2	
11	8	13	5	9	10	31	35	2	3	
27	10	25	28	9	14	37	45	6	7	
8	3	9	9	2	3	16	22	1	3	
10	10	12	14	5	5	20	21	2	4	
4	6	5	9	3	3	8	13	2	3	
60	44	41	53	17	8	68	80	2	3	
1	2	14	16	10	12	21	24	2	1	
62	68	60	67	15	26	76	95	3	4	
23	21	17	15	9	9	30	39	1	1	
235	187	232	230	91	95	356	436	25	33	
13	23	13	13	9	3	41	48	..	3	
33	36	33	32	16	14	68	83	2	3	
10	7	6	6	4	3	15	18	1	1	
8	3	8	4	1	.....	9	15	3	1	
64	69	60	55	30	20	133	164	6	8	

CENSUS RETURN of Resident and Nomadic Indians;

NORTHWEST

Indians.	Census Return	Religion. Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
BATTLEFORD AGENCY.									
Mosquito, Bear's Head, Lean Man } Stony	78	3			3				72
Red Pheasant	143	103			32				8
Sweet Grass	83	30			39				14
Ponndmaker	107	3			99				5
Little Pine and Lucky Man	104	37			40				27
Moosomin	108	17			34				57
Thunderchild	131	45			55				31
Total	754	238			302				214
ONION LAKE AGENCY.									
Seekaskootch	255	51			128				76
Sweet Grass (attached)	20	19			1				
Weemisticooseahwasis	107	14			85				8
Ooneepowhayo	92	23			57				12
Puskeeahkeewein	30	5			25				
Keeheewin	121	2			119				
Kinoosayo (Chipewyan)	253				253				
Total	878	114			668				96
EDMONTON AGENCY.									
Enoch	122			21	101				
Michel	97				97				
Alexander	190			2	188				
Joseph	147				147				
Paul (White Whale Lake)	147			124	20				3
Orphans at St. Albert	5				5				
Total	708			147	558				3
SADDLE LAKE AGENCY.									
Saddle Lake	133			95	38				
Blue Quill	110			8	102				
James Seenum	331			249	82				
Lac la Biche	16				16				
Chipewyan	70				70				
Beaver Lake	99				99				
Total	759			352	407				
Total, Treaty No. 6	6,236	1,726	136	814	2,820				740
Treaty No. 7.									
BLACKFOOT AGENCY.									
Running Rabbit (Farm 20 A)	456	32			106				318
White Pup (Farm 20 B)	486	58			57				371
Total	942	90			163				689

Denominations to which they belong, &c.—*Continued.*

TERRITORIES—*Continued.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
7	6	8	4	6	1	18	22	1	5	
11	14	15	14	10	4	37	34	2	2	
8	6	6	4	6	3	18	25	2	5	
9	9	14	11	8	9	22	20	2	3	
6	8	13	7	6	2	26	29	3	4	
6	9	7	10	7	5	26	31	3	4	
8	15	9	8	12	7	32	32	5	3	
55	67	72	58	55	31	179	193	18	26	
29	28	27	30	11	10	53	51	3	13	
3	1	2	.....	1	.....	4	6	1	2	
7	10	11	16	6	4	23	25	1	4	
11	5	5	9	7	4	20	24	2	5	
2	3	2	6	1	2	3	6	1	4	
10	15	20	5	10	3	25	25	1	7	
34	30	19	15	13	16	51	66	2	7	
96	92	86	81	49	39	179	203	11	42	
10	10	11	10	9	8	30	30	1	3	
8	11	5	7	7	7	20	27	3	2	
22	18	19	13	3	5	47	56	4	3	
17	19	18	19	8	10	24	31	.....	1	
20	15	16	11	12	5	26	34	5	3	
.....	.....	.....	.....	3	2	.....	.....	.....	.....	
77	73	69	60	42	37	147	178	13	12	
11	10	14	9	14	9	29	33	2	2	
12	16	8	2	7	4	26	28	2	1	
57	30	22	21	16	21	72	85	3	4	
2	.....	2	2	..	....	3	7	.....	.....	
9	12	7	3	4	2	12	19	1	1	
19	12	7	3	3	6	24	25	1	3	
110	80	60	40	44	42	166	197	9	11	
699	633	647	584	338	304	1,285	1,509	96	141	
22	27	53	42	22	25	124	120	10	11	
29	32	59	47	23	14	118	140	11	13	
51	59	112	89	45	39	242	260	21	24	

CENSUS RETURN of Resident and Nomadic Indians;

NORTHWEST

Indians.	Census Return.	Religion. Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
SARCEE AGENCY.									
Bull Head	203	27	....	..	8	.	. .	.....	168
Stony Reserve	661	....	.....	661	.....	..	....	... ..	....
BLOOD AGENCY.									
Bloods	1,253	130	. ...	.. ...	110	.....	.....	... ..	1,013
PEIGAN AGENCY.									
Peigans	530	62	.....	.. .	131	.. ..	.. .	.....	337
Total, Treaty No. 7.	3,589	309	.....	661	412	.. ...	.. .	...	2,207
Treaty No. 8.									
Crees and Chipewyans at Ft. McMurray.	147	... .	... ..	...	. .	.....	..	.....	
Chipewyans at Fond du Lac	248	.....	.....	.....	.....	.....	.....	.....	....
Beavers at Dunvegan	138	.. ....	.....	.....	.....	.....	.....	....	.....
Crees at Little Red River	58	. . ..	.....	.....	.....	.....	.....	.	.....
Chipewyans at Fort Chipewyan	326	.....	.....	..	. .	.....	.....	.....	.....
Crees at Fort Chipewyan	200	.....	....	.....	..	...	..	....	.....
Chipewyans at Smith Landing	245	....	....	.....	....	...	.	.....	... ..
Crees at Wabiscow	216	... ..	....	.....	.	....	.....	.....	.....
Crees at Peace River Landing	54	....	..	.....	.....	.....	....	.....	.....
Beavers at Vermilion, Peace River	141	.....	....	..	...	.....	.....	...	....
Crees at Vermilion, Peace River	77	.....	...	.. ..	....	.	.....	.....	....
Crees at Lesser Slave Lake	302	.....	...	.....	....	.....	.....	.....	.....
Crees at Sturgeon Lake	131	.....	.....	.....	.	.....	.....	...	.....
Beavers at Fort St. John	47	.. .	.....	.. ..	.....	.....	.. .	...	.....
Stragglers at Fort McMurray	29	.....	. ..	.....	...	.....	.....	.....	.. ...
Crees at Whitefish Lake	75	.....	...	.. .	.	.....	.....	.....	..
Slaves of Upper Hay River	238	.....	.....	.....	...	..	.....	...	...
Slaves of Lower Hay River	120	.. .	....	.....	.....	...	.....	...	... ..
Chipewyans at Fort Resolution	122	.....	....	....	.....	.....	.. .	....	.....
Yellowknives at Fort Resolution	249	.. .	.....	.....	..	.....	.....	...	... .
Dogribs at Fort Resolution	207	.....	....	.....	.....	...	.....	....	....
Stragglers at Athabaska Landing	6	....	....	.....	.....	.	...	.....	.....
Total	3,376	..	. .	..	.. .	.....	.. ..	.....	...
Athabaska District	1,239	.....	....	.....	.....	.....	.....	... .	.....
McKenzie "	4,149	. .	..	.....	..	.....	..	....	.....
Yukon	3,302	....	.....	.....	....	.....	.....	.....	... .
Keewatin	5,834	.. ..	. ..	.	.....	.....	.....	.....	. ..
Total	14,524	.....	....	.....	.....	.....	.....	.....	.....

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Denominations to which they belong, &c.—*Continued.*

TERRITORIES—*Concluded.*

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
13	12	13	12	7	9	51	66	9	11	
67	56	39	43	58	53	153	185	4	3	
120	92	96	71	78	63	281	398	25	29	
55	63	47	49	24	16	119	142	4	11	
306	282	307	264	212	180	846	1,051	63	78	
.....	.....	.....	.....	.....	...	....	.....	.....	.....	Religious belief not given. No details. No agent.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

CENSUS RETURN of Resident and Nomadic Indians;

RECAPITU-

PROVINCE OF

Indians.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
West Coast Agency	2,414		287	150	631				1,346
Fraser River "	2,865	73		158	2,582				52
Babine and Upper Skeena River Agency.	2,898	592		288	1,792			129	97
Williams Lake Agency	1,985	19			1,966				
Northwest Coast Agency	4,149	1,202		2,309					638
Kootenay Agency	562				562				
Cowichan "	1,934		57	347	1,465				65
Kamloops-Okanagan Agency	3,834	1,396			2,437				1
Kwawkewlth Agency	1,359	662		96					601
Nomadic Indians, about	3,500								
Grand total	25,500	3,944	344	3,348	11,435			129	2,800

PROVINCE OF

Treaty No. 1	2,413	1,234			705	77		8	389
" 2	799	354			321	56			68
" 3	35								35
" 5	3,375	1,123		1,660	72			18	402
Sioux at Portage la Prairie	132		100						32
Grand total	6,754	2,811	100	1,660	1,098	133		26	926

NORTHWEST

Treaty No. 4	4,556	482	659	1	1,047				2,367
" 6	6,236	1,726	136	814	2,820				740
" 7	3,589	309		661	412				2,207
" 8	3,376								
Non-treaty Indians where no agents	165								
Grand total	17,922	2,517	795	1,476	4,279				5,314
Ungava	5,060								
Franklin District (formerly Arctic Coast, Esquimaux)	2,500								

NOTE.—Labrador, Canadian Interior, which has appeared in previous annual reports, has been dropped.

Denominations to which they belong, &c.—*Continued.*

LATION.

BRITISH COLUMBIA.

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
165	157	213	202	57	69	649	725	97	80	
283	284	240	241	105	101	697	697	117	100	
169	169	253	276	155	155	794	808	65	54	
213	201	91	85	166	170	456	456	80	73	
332	323	331	321	246	232	1,096	1,075	92	101	
57	56	52	44	22	25	130	138	21	17	
189	179	196	180	41	38	528	570	4	9	
296	298	317	312	167	163	1,049	1,039	93	100	
111	92	65	77	38	14	471	401	29	61	
.	. ....	.....	...		....	. .	.....	....	.....	
1,815	1,759	1,758	1,738	991	967	5,870	5,909	598	595	

MANITOBA.

230	236	227	201	125	130	618	619	10	17	
82	68	93	79	45	39	180	176	21	16	
3	1	1	1	4	3	10	9	...	3	
329	364	381	346	251	174	648	734	68	80	
19	9	18	16	7	3	25	26	4	5	
663	678	720	643	432	349	1,481	1,564	103	121	

TERRITORIES.

434	456	405	417	190	192	944	1,120	123	155	
699	633	647	584	338	304	1,285	1,509	96	141	
306	282	307	264	212	180	846	1,051	63	78	
....	.....	.. ..	.. ..	.. ..	....	.....	.....	.....	.....	No details : no agent.
. .	.....	.. ..	.....	.. ..	...	.....	.....	....	.....	
1,439	1,371	1,359	1.265	740	676	3,075	3,680	282	374	
.....	.....	.....	...	. ....	.....	....	.	.	....	NOTE.—4,500 of these appear in the Dominion census as 'not specified', but it is believed that they are Indians.
. . ..	..	.. ..	.....	.	.....	.....	.....	.....	. ..	NOTE.—These appear in the Dominion census as 'not specified', but it is believed that they are Indians or Esquimaux.

s it is not given in the Dominion census.

CENSUS RETURN of Resident and Nomadic Indians;

GRAND

Provinces, &c.	Census Return.	Religion.							
		Anglican.	Presbyterian.	Methodist.	Roman Catholic.	Baptist.	Congregationalist.	Other Christian Beliefs.	Pagan.
Ontario	20,988	5,113	133	4,176	6,570	926	86	415	3,115
Quebec	10,842	87	3	446	7,326		4	32	
Nova Scotia	2,067				2,067				
New Brunswick	1,644				1,644				
Prince Edward Island	316				316				
British Columbia	25,500	3,944	344	3,348	11,435			129	2,800
Manitoba	6,754	2,811	100	1,660	1,098	133		26	926
Northwest Territories	17,922	2,517	795	1,476	4,279				5,314
Ungava	5,060								
Franklin District (formerly Arctic Coast)	2,500								
Athabaska District	1,239								
McKenzie "	4,149								
Yukon	3,302								
Keewatin	5,834								
Grand total	108,112	14,472	1,375	11,106	34,735	1,059	90	602	12,155

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Denominations to which they belong, &c.—*Concluded.*

RECAPITULATION.

Under 6 years.		From 6 to 15 yrs., inclusive.		From 16 to 20 yrs., inclusive.		From 21 to 65 yrs., inclusive.		From 65 years upwards.		Remarks.
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
1598	1754	2155	2039	1201	1058	4838	5002	427	462	
716	745	898	770	447	470	1765	1678	157	182	
146	134	229	229	174	155	412	392	55	50	
128	146	186	170	63	63	413	386	45	44	
46	50	30	25	23	20	54	55	7	6	
1815	1759	1758	1738	991	967	5870	5909	598	595	
663	678	720	643	432	349	1481	1564	103	121	
1439	1371	1359	1265	740	676	3075	3680	282	374	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Note.—10,190 appear in the Dominion census as 'not specified' but it is believed that they are Indians.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
6551	6637	7335	6879	4071	3758	17908	18666	1674	1834	

REALTY OF INDIANS.

Agency.	Land.		Public Buildings, Property of the Band.						Private Fencing and Buildings.				
	Cleared, including natural pasturage.	Cultivated, including made pasturage.	Churches.	Council Houses.	School Houses.	Driving Sheds.	Other Buildings.	Ferries.	Acres Fenced.	Dwellings, Stone.	Dwellings, Brick.	Dwellings, Frame.	Dwellings, Log.
Ontario.	Acres.	Acres.											
Grand River Superintendency—Six Nations	23,974	10,722	14	1	11	7	1	.....	41,696	1	16	204	365
Parry Sound Superintendency	1,527	.....	7	1	6	1	7	.....	1,527	.....	.....	23	125
New Credit (Mississaguas) Agency	1,010	3,450	2	1	1	3	3	.....	5,200	.....	3	45	20
Walpole Island Agency	8,200	2,991	2	1	3	2	2	4	2,751	.....	.....	99	111
Sarnia "	2,259	1,572	4	2	3	1	1	.....	5,472	.....	3	143	8
Caradoc "	4,309	10,616	.....	3	6	1	13	.....	16,050	.....	6	160	167
Moravian "	1,200	960	.....	1	1	.....	.....	.....	2,240	.....	1	28	59
Manitowaning "	1,502	3,724	7	3	9	2	.....	.....	2,216	.....	.....	39	280
Gore Bay "	3,859	1,337	3	.....	2	.....	2	.....	1,382	.....	.....	7	104
Thessalon "	350	260	3	.....	5	.....	.....	.....	260	.....	.....	28	57
Sault Ste. Marie "	1,557	2,675	6	1	2	.....	1	.....	2,480	.....	.....	32	119
Port Arthur "	816	563	3	2	6	1	2	.....	334	.....	.....	19	190
Golden Lake "	247	20	1	.....	1	.....	1	.....	92	.....	.....	.....	13
*Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	200	541	1	1	1	1	1	.....	541	.....	.....	13	19
Cape Croker "	3,500	1,500	2	1	3	2	4	.....	700	1	.....	40	60
Saugeen "	1,065	1,055	4	1	3	3	9	.....	885	.....	1	65	45
Alnwick "	.....	2,499	1	1	1	1	4	.....	2,440	.....	.....	48	9
Mud Lake "	300	250	1	1	1	2	6	.....	600	.....	1	32	12
Rice Lake "	885	575	1	1	1	1	1	.....	760	.....	.....	11	14
Rama "	390	750	1	1	1	2	2	.....	936	.....	.....	48	30
Christian Island "	1,000	675	2	1	1	.....	.....	.....	675	.....	.....	4	42
Scugog "	20	740	1	.....	.....	1	.....	.....	800	.....	.....	5	3
Indians of Christian Island band residing on Manitoulin Island	.....	.....	.....	.....	.....	.....	.....	.....	20	.....	.....	.....	8
Rat Portage Agency	1,119	123	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	146
Couchiching "	215	129	1	.....	5	.....	1	.....	160	.....	.....	.....	117
Savanne "	9,483	117	.....	.....	7	.....	.....	.....	222½	.....	.....	.....	171
Total	68,987	47,944	67	24	84	31	61	4	90,239½	2	31	1,083	2,297

QUEBEC.

Lake of Two Mountains Agency	260	1,540							1,015	2		72	8
Caughnawga	4,177	4,150	1	1	3		3		2,530	40	20	399	13
St. Regis	2,667	2,950	2	1	4		11		935			143	50
Viger													19
St. Francis	141	379	3	1	2		2		160		2	77	2
*Lake St. John													
Maria	46	134	1		1				134			17	3
Restigouche	202	608	1	1	1				610			65	24
River Desert	733	45			2	1			344				25
Jeune Lorette	280	200	1		1		2		1,230	1	1	70	
Becancour	4	65			1				48			5	
Temiscaminigue	144	258			1				128			6	27
Bersimis	365	45	2									37	38
*Mingan													
Total	9,019	10,374	11	4	16	1	18		7,134	43	23	891	299

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

REALTY OF INDIANS—*Concluded.*

Agency.	Private Buildings.									
	Shanties.	Barns.	Horse Stables.	Driving Houses.	Cattle Stables.	Pig Sties.	Store Houses.	Root Houses.	Milk Houses.	Corn Cribs.
ONTARIO.										
Grand River Superintendency—Six Nations	27	146	356	80	182	177	61	43	113	61
Parry Sound Superintendency	18	42	50	.....	38	2	20	.....	.....	.....
New Credit (Mississaguas) Agency	5	35	27	5	5	15	1	6	17	2
Walpole Island Agency	.....	10	124	.....	.....	51	49	6	11	64
Sarnia "	5	36	78	7	25	39	27	13	18	30
Caradoc "	32	53	143	35	68	59	52	18	24	56
Moravian "	3	10	50	3	20	24	14	15	6	20
Manitowaning "	59	74	189	8	65	157	40	139	4	16
Gore Bay "	20	59	80	25	27	94	12	36	11	5
Thessalon "	23	10	32	.....	15	7	3	6	4	.....
Sault Ste. Marie "	23	44	53	2	30	18	17	21	.....	.....
Port Arthur "	3	32	2	.....	20	.....	12	5	.....	.....
Golden Lake "	3	4	8	.....	10	3	.....	.....	1	.....
*Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	1	8	20	.....	14	13	1	5	4	.....
Cape Croker "	.....	50	56	1	32	12	1	3	5	.....
Saugeen "	.....	25	75	10	20	30	1	5	.....	.....
Alnwick "	2	17	20	2	3	1	1	.....	1	.....
Mud Lake "	1	12	10	2	11	4	.....	2	2	.....
Rice Lake "	.....	10	11	.....	7	7	.....	5	1	.....
Rama "	2	31	32	5	3	10	30	10	2	.....
Christian Island "	3	10	33	6	20	20	4	10	10	13
Scugog "	1	6	7	.....	3	2	.....	2	.....	.....
Indians of Christian Island band residing on Manitoulin Island	.....	3	5	.....	2	1	.....	5	.....	.....
Rat Portage Agency	.....	.....	39	.....	21	.....	6	.....	.....	.....
Couchiching "	32	.....	29	.....	14	.....	.....	.....	.....	.....
Savanne "	.....	.....	2	.....	13	.....	.....	.....	.....	.....
Total	263	727	1,531	191	668	746	382	355	234	267

QUEBEC.

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AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS.

Agency.	Agricultural Implements, Vehicles, &c.										
	Ploughs.	Harrows.	Seed Drills.	Cultivators.	Land Rollers.	Mowers.	Reapers.	Horse Rakes.	Fanning Mills.	Threshing Machines.	Tool Chests.
ONTARIO.											
Grand River Superintendency—Six Nations	373	264	62	194	82	128	94	124	142	2	93
Parry Sound Superintendency	38	26	...	...	...	2	1	...	6	...	...
New Credit (Mississaguas) Agency	50	45	12	10	5	15	12	13	18	2	2
Walpole Island Agency	96	56	24	61	2	37	5	19	32	...	...
Sarnia "	82	72	7	39	3	28	25	25	42	2	16
Caradoc "	147	147	27	113	21	60	49	39	61	2	57
Moravian "	62	58	9	60	3	15	10	15	15	...	3
Manitowaning "	181	105	...	5	...	27	8	24	12	3	51
Gore Bay "	56	59	...	...	...	2	...	7	9	2	2
Thessalon "	20	8	...	...	...	...	...	...	...	...	...
Sault Ste. Marie "	41	31	...	1	...	2	...	4	4	1	4
Port Arthur "	28	11	...	...	...	1	...	...	...	...	3
Golden Lake "	4	3	...	...	...	...	...	...	...	...	...
*Tyendinaga "	...	...	...	...	...	...	...	...	...	...	...
Lake Simcoe "	22	13	...	1	...	2	2	2	4	1	9
Cape Croker "	45	35	2	6	3	10	1	18	20	1	4
Saugeen "	62	40	...	2	...	8	2	12	5	...	50
Alnwick "	27	18	6	9	6	4	5	7	11	...	3
Mud Lake "	13	10	3	3	2	1	2	1	5	1	1
Rice Lake "	10	7	1	1	1	1	2	2	5	...	1
Rama "	20	19	1	1	2	1	2	2	2	...	4
Christian Island "	50	40	4	6	6	3	1	3	4	1	6
Scugog "	5	3	2	...	...	1	2	1	4	...	3
Indians of Christian Island band residing on Manitoulin Island	4	3	...	...	...	...	...	...	1	...	2
Rat Portage Agency	11	8	...	...	...	...	...	...	...	...	...
Couchiching "	23	15	...	...	...	...	...	...	1	...	...
Savanne "	15	14	...	...	...	...	...	...	...	...	...
Total	1,485	1,113	160	512	136	348	223	318	403	18	314

QUEBEC.

Lake of Two Mountains Agency	38	32	....	6	1	8	1	11	10	4	4
Caughnawaga Agency	245	200	15	30	8	32	8	37	20	16	75
St. Regis "	106	82	6	75	4	48	16	49	8	10	60
Viger "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Francis "	4	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
*Lake St. John "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maria "	4	5	.....	.....	2	.....	.....	.....	2	1	3
Restigouche "	34	28	.....	4	3	4	2	13	3	1	4
River Desert "	23	24	1	.....	3	3	1	5	4	.....	.....
Jeune Lorette "	5	5	.....	1	.....	.....	.....	1	.....	.....	.....
Becancour "	3	3	.....	.....	.....	2	.....	1	.....	.....	.....
Temiscamingue "	10	12	.....	.....	1	1	.....	1	1	1	2
Bersimis "	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*Mingan "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	473	397	22	116	22	98	28	118	48	33	148

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Agricultural Implements, Vehicles, &c.							
	Other Implements.	Wagons.	Carts.	Sleighs, Draught.	Sleighs, Driving.	Democrat Wagons.	Buggies and Road Carts.	Value of Implements and Vehicles.
								$ cts.
ONTARIO.								
Grand River Superintendency—Six Nations	2,729	280	101	219	89	107	215	30,246 00
Parry Sound "	680	11	1	31	12	1	.....	2,660 00
New Credit (Mississaguas) Agency	150	32	.....	24	12	18	40	3,500 00
Walpole Island Agency	135	78	9	38	16	27	60	9,485 00
Sarnia "	666	81	.....	60	13	10	81	13,697 00
Caradoc "	2,588	119	16	88	47	44	130	15,317 80
Moravian "	400	44	....	34	10	12	46	7,700 00
Manitowaning "	1,620	127	10	152	143	13	24	11,675 00
Gore Bay "	921	31	2	60	70	3	26	7,022 25
Thessalon "	415	2	3	9	29	.....	.....	808 00
Sault Ste. Marie "	1,600	20	6	61	11	1	5	1,415 00
Port Arthur "	1,545	3	2	26	4	.....	.....	2,960 00
Golden Lake "	12	.....	.....	5	3	2	3	475 00
*Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	110	4	.....	8	12	2	2	1,000 00
Cape Croker "	400	40	2	24	20	15	15	8,560 00
Saugeen "	1,500	30	.....	50	40	25	65	5,546 00
Alnwick "	300	19	6	18	17	10	17	2,964 45
Mud Lake "	150	6	1	8	5	5	3	1,400 00
Rice Lake "	70	5	1	5	2	.....	4	1,200 00
Rama "	120	7	.....	8	7	2	11	1,300 00
Christian Island "	125	18	2	20	5	3	4	2,500 00
Scugog "	43	3	.....	3	3	2	6	745 00
Indians of Christian Island band residing on Manitoulin Island	52	1	1	3	3	.....	.....	250 00
Rat Portage Agency	331	.....	.....	.....	.....	.....	.....	389 25
Couchiching "	390	.....	.....	2	5	.....	.....	835 00
Savanne "	487	.....	.....	.....	.....	.....	.....	492 50
Total	17,539	964	163	956	578	302	757	137,143 25

QUEBEC.

Lake of Two Mountains Agency	465	14	49	46	37	7	37	6,718 00
Caughnawaga Agency	550	140	185	200	50	...	80	9,951 00
St. Regis	250	63	25	79	50	15	60	8,250 00
"	...	...	...	...	...	...	...	...
"	...	...	...	...	...	...	...	...
St. Francis	242	9	...	10	8	...	7	792 50
*Lake St. John	...	...	...	...	...	...	...	...
"	...	...	...	...	...	...	...	...
Maria	120	3	5	6	4	...	...	1,000 00
Restigouche	160	8	10	20	8	4	8	4,600 00
River Desert	317	8	12	25	6	4	11	2,964 00
Jeune Lorette	260	4	6	10	5	1	4	300 00
Becancour	50	2	2	5	1	...	2	325 00
Temiscamingue	200	2	1	13	...	1	...	1,040 00
Bersimis	...	2	4	2	...	...	2	91 00
*Mingan	...	...	...	...	...	...	...	...
Total	2,614	295	299	316	169	32	211	36,031 50

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Live Stock and Poultry.											
	Horses.			Cattle.					Other Stock.			
	Stallions and Geldings.	Mares.	Colts, Fillies and Foals.	Bulls.	Oxen, Work.	Steers.	Cows, Milch.	Young Stock.	Sheep.	Lambs.	Boars, Breeding.	
Ontario.												
Grand River Superintendency—Six Nations	433	530	181	24	1	.....	781	578	283	72	33	
Parry Sound Superintendency	27	30	15	9	11	18	108	98	31	.....	.....	
New Credit (Mississaguas) Agency	47	42	22	5	.....	20	72	70	20	18	5	
Walpole Island Agency	100	105	56	7	3	23	191	242	22	.....	37	
Sarnia "	105	93	13	6	.....	45	112	79	.....	.....	4	
Caradoc "	114	143	66	7	.....	39	169	217	14	6	3	
Moravian "	46	77	30	4	.....	20	54	100	.....	.....	6	
Manitowaning "	167	209	73	7	9	27	94	105	35	15	14	
Gore Bay "	43	55	14	8	3	1	42	14	45	.....	32	
Thessalon "	42	25	10	.....	6	6	26	32	.....	.....	.....	
Sault Ste. Marie "	45	36	22	6	30	21	86	114	.....	.....	3	
Port Arthur "	20	12	3	5	8	7	28	22	.....	.....	.....	
Golden Lake "	.....	3	3	1	.....	.....	9	12	.....	.....	.....	
*Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Lake Simcoe "	6	17	2	1	.....	12	20	27	7	4	1	
Cape Croker "	70	45	20	2	.....	20	45	40	40	35	2	
Saugeen "	25	70	45	2	.....	18	40	34	8	.....	.....	
Alnwick "	24	20	3	4	.....	6	44	40	.....	.....	.....	
Mud Lake "	7	12	5	2	.....	15	22	18	.....	.....	1	
Rice Lake "	11	9	7	2	.....	10	17	12	.....	.....	1	
Rama "	3	12	2	.....	.....	4	7	8	.....	.....	.....	
Christian Island "	44	50	17	1	4	20	55	60	30	15	12	
Scugog "	5	4	1	.....	.....	.....	3	2	.....	.....	.....	
Indians of Christian Island band residing on Manitoulin Island	5	3	.....	.....	.....	.....	2	.....	.....	.....	.....	
Rat Portage Agency	36	19	2	6	27	6	20	12	.....	.....	.....	

Couchiching "	31	34	.....	5	13	1	12	16	.....	.....	.....
Savanne "	7	.....	.....	6	2	.....	11	18	.....	.....	.....
Total	1,463	1,655	612	120	117	339	2,071	1,970	535	165	154
QUEBEC.											
Lake of Two Mountains Agency	3	67	30	20	.....	7	105	100	30	20	.....
Caughnawaga Agency	4	80	90	25	.....	15	360	225	10	.....	2
St. Regis "	75	100	75	20	.....	.....	190	175	.....	.....	18
Viger "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Francis "	3	6	.....	1	.....	.....	30	30	.....	.....	.....
*Lake St. John "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maria "	.....	3	4	1	2	4	10	8	3	2	.....
Restigouche "	14	20	8	5	3	6	40	79	28	17	5
River Desert "	29	12	2	3	.....	5	46	26	25	15	5
Jeune Lorette "	.....	5	2	2	.....	3	16	7	2	.....	.....
Becancour "	3	.....	1	3	1	.....	9	8	3	5	.....
Temiscamingue "	5	8	3	.....	.....	2	11	15	6	6	.....
Bersimis "	3	.....	.....	1	.....	.....	6	5	.....	.....	.....
*Mingan "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	139	301	215	81	6	42	823	678	107	65	30

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Live Stock and Poultry.							General Effects.		
	Other Stock—*Con.*		Poultry.							
	Sows, Breeding.	Pigs.	Turkeys.	Geese.	Ducks.	Cocks and Hens.	Value of Live Stock and Poultry.	Sail Boats.	Row Boats.	Canoes.
ONTARIO.							$ cts.			
Grand River Superintendency—Six Nations	436	2,005	1,100	285	974	15,475	53,540 00	.....	4	1
Parry Sound Superintendency	1	48	3	.....	.....	760	9,940 00	22	29	94
New Credit (Mississaguas) Agency	32	72	205	65	180	750	9,500 00	.....	.....	.....
Walpole Island "	270	673	400	102	196	4,000	17,470 00	5	14	36
Sarnia "	17	186	266	6	169	2,507	11,301 00	.....	31	.....
Caradoc "	73	325	245	76	140	7,268	27,295 10	.....	6	1
Moravian "	72	230	25	75	36	300	12,000 00	.....	2	.....
Manitowaning "	122	780	.....	.....	.....	2,300	17,125 00	110	35	37
Gore Bay "	93	206	17	23	9	732	11,767 50	36	21	1
Thessalon "	11	72	2	.....	.....	373	6,092 00	34	18	63
Sault Ste. Marie "	15	73	33	20	.....	1,970	8,651 00	63	34	78
Port Arthur "	.....	.....	.....	12	9	440	4,590 00	32	30	508
Golden Lake "	1	13	.....	.....	.....	15	634 00	.....	.....	17
*Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	8	40	40	.....	35	335	3,255 00	2	24	3
Cape Croker "	45	400	25	10	30	500	14,190 50	10	25	6
Saugeen "	75	200	75	30	50	250	6,320 00	.....	7	3
Alnwick "	11	51	27	9	27	550	4,997 25	.....	1	15
Mud Lake "	2	20	25	20	50	300	4,000 00	.....	.....	52
Rice Lake "	4	50	40	20	20	200	2,300 00	.....	.....	15
Rama "	4	54	18	28	87	130	1,500 00	.....	.....	.....
Christian Island "	60	170	20	30	.....	600	4,500 00	20	30	22
Scugog "	6	10	5	12	10	100	850 00	.....	3	9
Indians of Christian Island band residing on Manitoulin Island	3	16	.....	.....	.....	50	125 00	4	.....	.....
Rat Portage Agency	.....	.....	.....	.....	.....	.....	3,515 00	2	3	375

Couchiching	"							3,920 00		1	389
Savanne	"							885 00	3	1	361
Total		1,361	5,694	2,572	823	2,022	39,905	240,663 35	343	349	2,086
QUEBEC.											
Lake of Two Mountains Agency		40	130				800	10,772 95		24	2
Caughnawaga	"	20	110			15	200	17,569 00		50	10
St. Regis	"	75	140	300	50	90	1,300	19,117 00		70	
Viger	"										
St. Francis	"	5	26				108	1,978 25		13	9
*Lake St. John	"										
Maria	"	5	11				100	1,000 00			
Restigouche	"	12	56			6	197	6,500 00		4	45
River Desert	"	9	18	30			250	4,725 00		3	45
Jeune Lorette	"		24			8	150	1,200 00			
Becancour	"	3	5				118	500 00			3
Temiscamingue	"		9				313	2,039 80		1	19
Bersimis	"							345 00	1		97
*Mingan	"										
Total		169	529	330	50	119	3,536	65,747 00	1	165	252

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued*

PERSONALTY OF INDIANS—*Concluded.*

Agency.	General Effects.						Household Effects.	Value of Real and Personal Property.
	Rifles.	Shot Guns.	Nets.	Steel Traps.	Tents.	Value of.	Value of.	
						$ cts.	$ cts.	$ cts.
ONTARIO.								
Grand River Superintendency—Six Nations	15	129	1	280	3	965 00	33,510 00	972,511 00
Parry Sound Superintendency	86	78	171	655	.....	4,925 00	17,450 00	371,896 00
New Credit (Mississaguas) Agency	5	25	3	21	1	125 00	6,700 00	207,775 00
Walpole Island Agency	22	53	10	1,200	....	700 00	14,500 00	289,739 00
Sarnia "	4	24	4	.....	....	1,143 00	11,821 00	408,782 00
Caradoc "	29	47	3	313	12	369 30	22,989 00	527,392 20
Moravian "	15	10	8	40	.....	230 00	30,000 00	174,630 00
Manitowaning "	36	142	363	589	84	7,650 00	30,200 00	340,373 00
Gore Bay "	6	78	99	144	7	5,444 00	8,250 00	158,773 75
Thessalon "	8	59	163	1,195	36	6,009 00	5,490 00	104,734 00
Sault Ste. Marie "	23	158	107	1,020	91	8,110 00	17,866 00	149,842 00
Port Arthur "	75	403	700	2,463	131	22,025 00	25,000 00	143,900 00
Golden Lake "	14	8	11	150	10	590 00	385 00	12,150 00
*Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	4	13	4	75	17	805 00	2,600 00	56,973 00
Cape Croker "	25	25	300	30	5	5,360 00	22,725 00	202,623 50
Saugeen "	45	100	25	110	10	1,285 00	6,000 00	97,646 00
Alnwick "	7	10	.. .	481	21	723 00	4,089 25	119,580 95
Mud Lake "	6	28	.....	1,800	15	1,350 00	2,000 00	50,350 00
Rice Lake "	2	7	.....	500	2	1,200 00	1,600 00	51,800 00
Rama "	21	14	.....	350	22	750 00	3,900 00	54,550 00
Christian Island "	35	25	35	425	20	1,200 00	4,200 00	51,400 00
Scugog "	3	6	1	300	....	175 00	850 00	45,520 00
Indians of Christian Island band residing on Manitoulin Island	1	2	12	2	1	300 00	800 00	2,775 00
Rat Portage Agency	32	217	320	1,943	92	6,946 50	3,115 00	199,792 75
Couchiching "	74	65	50	420	57	3,829 00	3,150 00	142,681 00
Sayanne "	53	209	393	3,114	157	7,164 00	2,030 00	62,705 50
Total	648	1,935	2,783	17,620	800	89,372 80	281,220 25	5,000,895 65

QUEBEC.								
Lake of Two Mountains Agency	8	26	16	149	3	480 15	4,035 50	63,053 60
Caughnawaga "	...	...	...	...	4	400 00	53,200 00	531,232 50
St. Regis "	15	25	25	600	...	1,100 00	14,500 00	356,753 00
Viger "		14	...	244	...	236 00	660 00	886 00
St. Francis "	3	25	...	620	26	750 00	7,068 00	89,653 75
*Lake St. John "	...	...	...	...	...	...	...	...
Maria "	1	12	...	90	...	500 00	2,000 00	17,450 00
Restigouche "	20	5	...	72	3	1,200 00	6,300 00	74,100 00
Rivert Desert "	25	96	15	65	39	2,611 00	5,160 00	180,348 00
Jeune Lorette "	4	60	...	500	8	1,300 00	8,500 00	79,800 00
Becancour "	2	5	2	10	2	60 00	450 00	5,635 00
Temiscamingue "	20	16	26	539	20	1,241 00	3,568 00	42,277 59
Bersimis "	13	127	29	1,039	76	3,780 00	5,312 00	35,124 00
*Mingan "	...	...	...	...	...	...	...	...
Total	111	411	113	3,928	181	13,658 15	110,753 50	1,476,313 44

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901.

Agency.	Grain, Roots and Fodder.									
	Wheat.		Oats.		Barley.		Corn.		Pease.	
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.
Ontario.										
Grand River Superintendency—Six Nations	2,027	20,997	2,249	41,054	249	1,781	906	33,214	356	3,276
Parry Sound Superintendency	.....	..	*	925	*	125	*	445	*	520
New Credit (Mississaguas) Agency	250	2,500	450	15,500	45	850	75	2,000	100	1,150
Walpole Island Agency	200	4,039	485	10,195	12	250	255	8,379	10	54
Sarnia "	305	7,003	482	16,011	59	1,281	156	3,832	22	557
Caradoc "	825	7,030	814	17,727	53	1,128	272	33,397	35	405
Moravian "	200	1,500	120	3,600	10	200	100	3,500	5	100
Manitowaning "	290	4,529	315½	8,633	5	100	78¼	1,647	372½	6,419
Gore Bay "	61	590	200⅔	2,409	37	155	69¼	810	207	2,045
Thessalon "	.....	.....	58	1,150	.....	..	22	634	45	880
Sault Ste. Marie "	1	10	70	975	.. ..	....	15	103	20	190
Port Arthur "	16	320	52	1,800	.....	.....	2	80	3	140
Golden Lake "	.....	.....	7	110	.....	.....	2	60	4	80
†Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	88	1,320	93	2,325	24	480	714	108	19	228
Cape Croker "	100	1,500	200	2,000	10	400	60	2,400	150	4,500
Saugeen "	35	700	200	3,600	.....	.....	33	1,155	100	1,200
Alnwick "	107	1,397	128	2,929	.....	.....	‡‡	141	106	1,468
Mud Lake "	30	500	200	3,050	.....	.....	4	80	.....	.....
Rice Lake "	90	1,560	50	1,000	.....	.....	2	40	80	700
Rama "	28	560	230	6,900	5	200	22	547	60	1,200
Christian Island "	35	650	90	1,900	.....	.....	70	800	40	500
Scugog "	34	381	53	1,190	4	120	1	13	15	230
Indians of Christian Island band residing on Manitoulin Island	2	25	2½	50	.....	.....	2¾	20	6	200
Rat Portage Agency	.....	..	...	.....	.....	.....	*	565	.....	.....

Couchiching Agency	...	...	4	100	...	...	2¾	11	...	...
Savanne "	...	...	...	...	...	...	2½	200	...	...
Total	4,724	59,111	6,553½	145,133	513	7,070	2,866¾	94,181	1,755½	26,042
QUEBEC.										
Lake of Two Mountains Agency	52	527	471	5,850	14	250	39	915	13	218
Caughnawaga Agency	7	200	150	6,000	...	...	...	...	...	...
St. Regis "	89	1,200	461	10,500	20	490	190	5,900	55	975
Viger "	...	...	...	...	...	...	...	...	...	...
St. Francis "	...	...	54½	432	...	...	3	57¼	2	8
†Lake St. John "	...	...	...	...	...	...	...	...	...	...
Maria "	8	120	50	1,000	...	...	...	...	...	...
Restigouche "	10	210	180	5,800	9	250	...	...	5	120
River Desert "	7	110	122	2,500	...	...	1	30	12	200
Jeune Lorette "	...	...	15	360	...	...	1	13	½	13
Becancour "	...	18	12	150	½	6	½	12	‡	...
Temiscamingue "	1	20	46	634	...	...	...	...	5	29
Bersimis "	...	...	2	37	...	...	...	...	...	...
†Mingan "	...	...	...	...	...	...	...	...	...	...
Total	174	2,405	1,563½	33,263	43½	996	234½	6,927¼	94½	1,563

*Not given. †No returns. ‡Several small plots.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901—*Continued.*

Agency.	Grain, Roots and Fodder—*Continued.*									
	Rye.		Buckwheat.		Beans.		Potatoes.		Carrots.	
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.
Ontario.										
Grand River Superintendency—Six Nations	714	10,664	20½	289	34	710	294¼	19,121	3¾	670
Parry Sound Superintendency	...	...	...	...	*	95	*	5,000	*	65
New Credit (Mississaguas) Agency	100	1,050	5	50	6	125	50	2,500	2	110
Walpole Island Agency	....	.....	10	218	30	519	225	4,134	.....	.....
Sarnia "	.....	.....	.....	.....	Grdns	289	122	5,564	1	40
Caradoc "	2	3	47	846	89	1,254	123	10,563	10	1,598
Moravian "	10	300	15	300	20	240	30	2,500	.....	.....
Manitowaning "	.....	.....	.....	.....	7¼	224	328	23,357	1½	43
Gore Bay "	.....	.....	.....	.....	15	102	291	5,867	16	89½
Thessalon "	.....	.....	.....	.....	.....	.....	97	6,046	.....	.....
Sault Ste. Marie "	.....	.....	.....	.....	1	40	226	4,300	4	72
Port Arthur "	.....	.....	.....	.....	½	8	89	19,400	½	90
Golden Lake "	.....	.....	.....	.....	½	9	5	535	.....	.....
‡Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	.....	.....	4	80	2	30	13	1,300	¾	100
Cape Croker "	.....	.....	.....	.....	5	100	50	3,750	2	85
Saugeen "	.....	.....	.....	.....	2	120	75	4,500	½	75
Alnwick "	110	1,230	3	80	....	28½	25¾	1,612	.....	11
Mud Lake "	.....	.....	15	150	1	20	20	2,000	1	200
Rice Lake "	4	80	5	50	....	.....	12	1,000	1	200
Rama "	.....	.....	.....	.....	3	61	38	3,350	2	280
Christian Island "	.....	.....	.....	.....	8	75	75	2,300	7	80
Scugog "	.....	.....	3	40	¼	6	4	270	¼	20
Indians of Christian Island band residing on Manitoulin Island	.....	.....	.....	.....	½	5	7	300	½	5
Rat Portage Agency	.....	.....	.....	.....	.....	.....	*	1,845	.....	.....

Couchiching "	.....	.....	.....	.....	.....	.....	$8\frac{1}{2}$	850	.....	.....
Savanne "	.....	.....	.....	.....	.....	.....	$35\frac{3}{4}$	2,380	.....	.....
Total.....	940	13,327	$127\frac{1}{2}$	2,103	$228\frac{1}{4}$	$4,060\frac{1}{2}$	2,244	134,374	55	$3,833\frac{1}{2}$
QUEBEC.										
Lake of Two Mountains Agency.....	..	.....	30	600	11	200	110	5,000	.....	.....
Caughnawaga Agency	.....	.....	60	1,800	7	200	150	6,000	.....	.....
St. Regis "	$3\frac{1}{5}$	75	30	750	9	290	150	5,500	8	300
Viger "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Francis "	.....	.....	8	47	3	26	$28\frac{3}{4}$	1,255	$\frac{1}{20}$	2
‡Lake St. John "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maria "	.....	.....	3	50	.....	.....	11	1,100	.....	.....
Restigouche "	.....	.....	20	590	1	18	45	4,200	$1\frac{1}{2}$	50
River Desert "	.....	.....	15	250	1	25	26	2,200	.....	.....
Jeune Lorette "	.....	.....	1	10	1	16	5	300	$\frac{1}{20}$	30
Becancour "	.....	.....	4	16	$\frac{1}{8}$	7	$2\frac{1}{2}$	200	$\frac{1}{20}$	6
Temiscamingue "	.....	.....	.....	.....	.....	.....	$14\frac{1}{2}$	1,534	.....	.....
Bersimis "	.....	.....	.....	.....	.....	.....	18	763	.....	.....
‡Mingan "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	$3\frac{1}{2}$	75	171	4,113	$33\frac{1}{8}$	782	$560\frac{3}{4}$	28,052	$10\frac{1}{4}$	388

* Not given. ‡ No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901—*Concluded.*

Agency.	Grain, Roots and Fodder—*Concluded.*							New Land Improvements.			
	Turnips.		Other Roots.		Hay.						
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Cultivated.	Wild.	Other Fodder.	Land Cleared.	Land Broken.	Land Cropped for first time.	Land Fenced.
ONTARIO.					Tons.	Tons.	Tons.	Acres.	Acres.	Acres.	Acres.
Grand River Superintendency—Six Nations	13	1,700	119¼	6,152	3,523	.. ..	2,637	.....	.....	.....	.....
Parry Sound "	¶	290	¶	115	350	35	.....	51	.....	.....	.....
New Credit (Mississagnas) Agency	6	240	5	225	320	.....	100	.....	30	40	40
Walpole Island Agency	7	125	*41	†423	247	467	1,200	.....	25	25	100
Sarnia "	1	60	.....	.....	493	.. ..	343	1	6	.....	.....
Caradoc "	7	461	9	3,545	1,513	33	787	.....	9	26	16½
Moravian "	.....	.....	6	2,400	300	.....	500	.....	.....	.....	.....
Manitowaning "	11½	752	.....	4	1,325	223½	380	10	17	12	.....
Gore Bay "	20¼	500	17	70½	309½	.....	188½	47	47	43	43
Thessalon "	.....	.....	.....	.....	76	52	10	.....	.....	.....	.....
Sault Ste. Marie "	13	600	11	114	270	211	.....	4	.....	2	.....
Port Arthur "	8	2,325	2	500	222	35	.....	6	5	4	2
Golden Lake "	½	75	.....	.....	9	15	.....	.....	.....	.....	.....
‡Tyendinaga "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Simcoe "	5½	2,200	¾	30	77	12	10	4	4	4	4
Cape Croker "	4	550	.....	.....	250	45	50	20	10	30	1½
Saugeen "	5	800	12	1,000	150	10	150	20	10	10	20
Alnwick "	9¾	2,265	1	281	123½	.....	170	.....	.....	.....	.....
Mud Lake "	5	1,500	2	400	75	.....	25	50	.....	30	300
Rice Lake "	10	2,000	1	200	60	.....	20	4	.....	.....	4
Rama "	3	570	1½	38	307	12	8	5	.....	2	2
Christian Island "	6	90	.....	.....	150	50	.....	50	.....	50	50
Scugog "	.....	.....	.....	.....	48	.....	.....	.....	.....	.....	.....
Indians of Christian Island band residing on Manitoulin Island	1	75	1	75	25	.....	.....	.....	.....	.....	.....
Rat Portage Agency	¶	30	.....	.....	.....	184	.....	.....	.....	.....	.....

Couchiching "					22	87					
Savanne "						52					
Total	136½	17,028	229	15,149½	10,244¾	1,523½	6,578¼	272	163	278	583¼
QUEBEC.											
Lake of Two Mountains Agency					200	7	300	20	10		
Caughnawaga Agency					3,000						20
St. Regis "	12	800	9	900	1,300	300	650		6	6	10
Viger "											
St. Francis "			⅛	2	94½			14	1	10	3
‡Lake St. John "											
Maria "	1	50			30		15	4	4	4	4
Restigouche "	4	800			210	20	110	8	5	4	4
River Desert "	7	2,000	1½	25	115	9	125	7		7	14
Jeune Lorette "	1	70	4	250	176	12	140				
Becancour "	⅛	30	1½	50	35						8
Temiscamingue "					55¼	25	25½	14	9	13	3
Bersimis "						16					
‡Mingan "											
Total	25⅛	3,750	16⅛	1,227	5,215¾	389	1,365½	67	35	44	46

* Sugar beets. † Tons. ‡ No returns. ¶ Not given.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PROGRESS DURING THE FISCAL YEAR ENDED JUNE 30, 1902.

Agency.	Buildings Erected.										
	Dwellings, Stone.	Dwellings, Brick.	Dwellings, Frame.	Dwellings, Log.	Shanties.	Barns.	Horse Stables.	Driving Houses.	Cattle Stables.	Pig Sties.	Store Houses.
ONTARIO.											
Grand River Superintendency—Six Nations	....	1	3	....	.....	11	1	2	3	2	....
Parry Sound Superintendency	....	....	....	6	....	....	1	....	....	....	....
New Credit (Mississaguas) Agency	....	....	2	....	....	2	1	....	2	6	....
Walpole Island Agency	....	....	5	....	....	....	....	....	....	....	....
Sarnia "	....	....	3	....	....	4	....	....	....	....	....
Caradoc "	....	....	4	....	....	....	....	....	....	....	....
Moravian "	....	....	....	2	....	1	2	....	....	4	2
Manitowaning "	....	....	2	....	....	....	....	....	....	....	....
Gore Bay "	....	....	....	5	1	3	3	1	1	8	8
Thessalon "	....	....	....	....	....	....	....	....	....	....	....
Sault Ste. Marie "	....	....	1	4	....	....	1	....	....	....	....
Port Arthur "	....	....	....	3	....	....	....	....	....	....	....
Golden Lake "	....	....	....	....	....	1	....	....	....	....	....
*Tyendinaga "	....	....	....	....	....	....	....	....	....	....	....
Lake Simcoe "	....	....	1	....	....	....	....	....	....	....	....
Cape Croker "	....	....	3	3	....	2	2	1	2	5	....
Saugeen "	....	....	....	....	....	....	3	10	....	....	....
Alnwick "	....	....	....	....	....	....	....	....	....	....	....
Mud Lake "	....	....	1	....	....	....	....	....	....	....	....
Rice Lake "	....	....	....	....	....	....	....	....	1	1	....
Rama "	....	....	....	....	....	....	....	....	....	....	....
Christian Island "	....	....	....	1	1	....	2	....	....	....	1
Scugog "	....	....	....	....	....	....	....	....	....	....	....
Indians of Christian Island band residing on Manitoulin Island	....	....	....	....	....	....	....	....	....	....	....
Rat Portage Agency	....	....	....	2	....	....	....	....	....	....	....

Couchiching "											
Savanne "											
Total		1	25	26	2	24	16	14	9	26	11
QUEBEC.											
Lake of Two Mountains Agency			6			5	6				
Caughnawaga Agency			20			5	12				
St. Regis "			4			2	1		1		
Viger "											
St. Francis "			4			1		1	2		
*Lake St. John "											
Maria "			1			2			2	1	
Restigouche "			3			1	1		1	2	
River Desert "				1	1						
Jeune Lorette "			1								
Becancour "						1					
Temiscamingue "			1	3							
Bersimis "			1								
*Mingan "											
Total			41	4	1	17	20	1	6	3	

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PROGRESS DURING THE FISCAL YEAR ENDED JUNE 30, 1902.

Agency.	Buildings Erected.			Increase in Value.		
	Root Houses.	Milk Houses.	Corn Cribs.	Value of Clearing, Cultivating and Fencing.	Value of Buildings.	Increased value of Agricultural Products and Industries.
Ontario.				$ cts.	$ cts.	$ cts.
Grand River Superintendency (Six Nations					4,050 00	4,050 00
Parry Sound Superintendency				765 00	350 00	1,115 00
New Credit (Mississaguas) Agency	1	1		300 00	900 00	1,200 00
Walpole Island Agency				900 00	150 00	1,050 00
Sarnia "					2,000 00	2,000 00
Caradoc "				809 00	275 00	1,084 00
Moravian "	3	1			700 00	700 00
Manitowaning "				200 00	400 00	600 00
Gore Bay "	6			940 00	1,191 00	2,131 00
Thessalon "						
Sault Ste. Marie "					525 00	525 00
Port Arthur "				12,000 00	375 00	12,375 00
Golden Lake "					50 00	50 00
*Tyendinaga "						
Lake Simcoe "				42 00	100 00	142 00
Cape Croker "		3		885 00	3,570 00	4,455 00
Saugeen "				225 00	160 00	385 00
Alnwick "						
Mud Lake "	2			600 00	200 00	800 00
Rice Lake "				100 00	100 00	200 00
Rama "				50 00		50 00
Christian Island "			1	700 00	800 00	1,500 00
Scugog "					100 00	100 00
Indians of Christian Island band residing on Manitoulin Island						
Rat Portage Agency					150 00	150 00
Couchiching "						
Savanne "						
Total	12	5	1	18,516 00	16,146 00	34,662 00

QUEBEC.

Lake of Two Mountains Agency		1	1	1	250 00	3,500 00	3,750 00
Caughnawaga	"					8,400 00	8,400 00
St. Regis	"			1	250 00	2,590 00	2,840 00
Viger	"						
St. Francis	"				250 00	3,055 00	3,305 00
*Lake St. John	"						
Maria	"		1		100 00	200 00	300 00
Restigouche	"		1		190 00	290 00	480 00
River Desert	"				105 00	75 00	180 00
Jeune Lorette	"					500 00	500 00
Becancour	"				10 00	90 00	100 00
Temiscamingue	"				275 00	450 00	725 00
Bersimis	"					350 00	350 00
*Mingan	"						
Total		1	3	2	1,430 00	19,500 00	20,930 00

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

SOURCES AND VALUE OF INCOME.

Agency.	Value of Farm Products, including Hay.	Wages Earned.	Received from Land Rentals.	The Estimated Value of Fish and Meat used for Food is included in these Columns.		Earned by other Industries.	Total Income of Indians.
				Earned by Fishing.	Earned by Hunting.		
ONTARIO.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts	$ cts.
Grand River Superintendency—Six Nations	90,195 00	129,042 25	5,115 40				224,352 65
Parry Sound Superintendency	6,499 25	17,900 00		3,700 00	6,300 00	3,300 00	37,699 25
New Credit (Mississaguas) Agency	10,750 00	2,700 00	2,500 00	200 00	850 00	1,500 00	18,500 00
Walpole Island Agency	13,529 00	12,000 00	25 00	1,225 00	395 00	8,394 00	35,568 00
Sarnia "	22,910 50	9,084 00	1,038 00	1,810 00		2,205 00	37,047 50
Caradoc "	38,317 81	53,601 00	5,542 30	331 00	62 00	4,457 00	102,311 11
Moravian "	8,175 00	5,000 00	40 00	1,500 00	600 00	2,000 00	17,315 00
Manitowaning "	28,115 00	22,450 00	3,360 00	19,450 00	48,900 00	15,050 00	137,325 00
Gore Bay "	11,238 45	29,080 00	229 50	27 00	51 30	9,945 00	50,571 25
Thessalon "	4,696 00	21,672 00	300 00	1,375 00	2,092 00	1,443 00	31,578 00
Sault St. Marie "	7,420 00	16,500 00	3,000 00	3,910 00	6,760 00	2,950 00	70,540 00
Port Arthur "	12,450 00	16,850 00		11,300 00	27,050 00	3,400 00	71,050 00
Golden Lake "	750 00				628 00	525 00	1,903 00
*Tyendinaga "							
Lake Simcoe "	3,004 80	1,975 00	170 00	1,025 00	45 00	2,000 00	8,219 80
Cape Croker "	14,676 25	2,500 00	30 00	4,200 00	350 00	4,800 00	26,556 25
Saugeen "	4,953 00	9,000 00	15 00	100 00	200 00	10,000 00	24,268 00
Alnwick "	7,082 75	4,387 00	1,414 25	173 00	210 00	887 00	14,154 00
Mud Lake "	4,000 00	1,500 00	1,300 00	500 00	1,200 00	1,300 00	9,800 00
Rice Lake "	2,000 00	500 00	992 25	200 00	700 00	500 00	4,892 25
Rama "	6,200 00	4,500 00		500 00	400 00	2,350 00	13,950 00
Christian Island "	4,500 00	2,500 00		800 00	800 00	5,300 00	13,900 00
Scugog "	1,280 00	60 00	132 25	300 00	350 00	100 00	2,222 25
Indians of Christian Island band residing on Manitoulin Island	350 00	500 00	160 00	600 00	800 00	400 00	2,810 00
Rat Portage Agency	2,132 50	9,125 00		4,020 00	10,028 00	5,055 00	30,360 50

Couchiching	"	1,485 00	12,300 00		9,700 00	5,250 00	3,450 00	32,185 00
Savanne	"	1,650 00	8,350 00		3,860 00	19,893 71	2,330 00	36,083 71
	Total	308,360 31	423,076 25	25,363 95	70,806 00	133,915 01	93,641 00	1,055,162 52
	QUEBEC.							
Lake of Two Mountains Agency		8,210 00	11,903 75	850 00	100 75	1,200 00	7,083 00	29,347 50
Caughnawaga Agency		57,040 00	90,315 00	780 00			6,500 00	134,635 00
St. Regis	"	25,802 50	27,908 80	168 73	3,945 00	4,250 00	17,200 00	79,275 03
Viger	"		2,375 00	244 57	129 00	960 00	3,045 00	6,753 57
St. Francis	"	1,555 90	208 00			235 00	29,800 00	31,798 90
*Lake St. John	"							
Maria	"	1,750 00	2,800 00		400 00	600 00	1,500 00	7,050 00
Restigouche	"	16,000 00	11,000 00	30 00	170 00	180 00	3,400 00	30,780 00
River Desert	"	3,200 00	10,530 00		75 00	3,500 00	9,700 00	27,005 00
Jeune Lorette	"	800 00	5,500 00		75 00	600 00	14,000 00	20,975 00
Becancour	"	375 00	2,100 00		15 00	25 00	350 00	2,865 00
Temiscamingue	"	1,934 40	8,375 00	16 00	132 75	978 00	129 00	11,559 15
Bersimis	"	668 00	1,000 00		460 00	38,417 00	1,025 00	41,570 00
*Mingan	"							
	Total	97,335 80	174,015 55	2,083 30	5,502 50	50,945 00	93,732 00	423,614 15

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

REALTY OF INDIANS.

Agency.	Land.		Public Buildings, Property of the Band.						Private Fencing and Buildings.					
	Cleared, including natural pasturage.	Cultivated, including made pasturage.	Churches.	Council Houses.	School Houses.	Driving Sheds.	Other Buildings.	Ferries.	Acres Fenced.	Dwellings, Stone.	Dwellings, Brick.	Dwellings, Frame.	Dwellings, Log.
New Brunswick.	Acres.	Acres.											
Richibucto Superintendency	2,115	985	6	....	2	.....	5	.	930	....	.....	149	.
Fredericton "	178	482	2	2	3	.....	3	.....	329½	....	...	108	10
Total	2,293	1,467	8	2	5	.....	8	.....	1,259½	....	.....	257	10
Prince Edward Island.													
Prince Edward Island Superintendency	304	264	1	....	1	.....	2	.....	266	.....	.....	44	
Nova Scotia.													
Annapolis County	6	.....	.....	.....	.....	.....	.....	....	10	.....	...	7	.....
Shelburne "	.....	11½	.....	.....	.....	.....	.....	.....	24	.....	.....	9	....
Digby "	200	48	1	.....	1	1	.....	.....	300	.....	.....	26	.....
*Yarmouth "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
King's "	4	4	.....	.....	.....	.....	.....	.....	20	.....	.....	9	....
Queen's "	200	200	.....	.....	.....	.....	.....	.....	160	.....	.....	16	.....
Halifax "	35	16	.....	.....	1	.....	.....	.....	.....	.....	.....	19	.....
Hants "	212	88	1	.....	1	.....	2	.....	80	.....	.....	15	....
Colchester "	22½	13⅞	.....	.....	1	.....	.....	.....	15	.....	.....	18	.....
Cumberland "	104	51	1	.....	.....	.....	.....	.....	60	.....	.....	19	.....
Pictou "	34	21	1	.....	1	.....	.....	.....	15	.....	.....	25	.....
Antigonish and Guysborough Counties	185	180	1	.....	.....	.....	.....	.....	200	.....	.....	35	.....
Richmond County	104	131	1	.....	1	.....	.....	1	136	.....	.....	10	.....
Inverness "	410	665	.....	.....	1	1	.....	.....	667	.....	.....	22	.....

Victoria "	194	60	..	.....	1	.....	.....	...	165	.....	.....	12	1
Cape Breton "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lunenburg "	300	450	.....	.....	1	.....	.....	.....	475	.....	.....	14	2
Total	2,009¼	1,939¼	6	.....	9	2	2	1	2,327	.....	.....	256	15
British Columbia.													
Cowichan Agency	5,397	3,109	3	.....	6	.....	.....	.....	5,193	.....	.....	550	10
West Coast "	360	64	.....	.....	1	.....	.....	.....	64	.....	.....	342	.....
Kwawkewlth "	311	19	.....	.....	5	.....	.....	.....	19	.....	.....	75	3
Lower Fraser "	3,392	3,761	42	5	.....	.....	.....	.....	4,837	.....	.....	753	62
Williams Lake "	59,807½	1,610¾	20	.....	.....	.....	.....	.....	22,141	.....	.....	4	436
Kamloops-Okanagan Agency	238,492	9,740	32	5	.....	.....	.....	.....	61,437	.....	.....	123	866
Kootenay Agency	38,711	1,030	5	.....	1	.....	.....	.....	1,030	.....	.....	11	128
Northwest Coast Agency	498	185	20	7	17	11	18	.....	144	.....	.....	773	19
Babine and Upper Skeena River Agency	22,017	425	2	.....	.....	.....	1	.....	583	.....	.....	288	471
Total	368,985½	19,943¾	124	17	30	11	19	.....	95,448	.....	.....	2,919	1,994
Manitoba.													
Clandeboye Agency	47,310½	378½	.....	.....	8	.....	.....	3	2,581	.....	.....	4	315
Portage la Prairie Agency	26,248	592	1	1	2	.....	3	.....	2,710	.....	.....	.....	40
Manitowapah "	33,533	242	7	.....	9	2	8	1	158	.....	.....	.....	221
Rat Portage (Buffalo Bay Band) Agency	200	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
Berens River Agency	16,818	358	7	1	10	.....	.....	.....	349	.....	.....	1	345
The Pas Agency	16,328	62	.....	1	4	.....	8	.....	69	.....	.....	.....	186
Total	140,437½	1,635½	15	3	33	2	19	4	5,867	.....	.....	5	1,114

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

REALTY OF INDIANS—*Concluded.*

Agency.	Private Buildings.									
	Shanties.	Barns.	Horse Stables.	Driving Sheds.	Cattle Stables.	Pig Sties.	Store Houses.	Root Houses.	Milk Houses.	Corn Cribs.
New Brunswick.										
Richibucto Superintendency	60	59	43	.....	45	31	.....	41	2	.....
Fredericton "	17	17	35	2	17	38	.....	8	6	.....
Total	77	76	78	2	62	69	.....	49	8	.....
Prince Edward Island.										
Prince Edward Island Superintendency	3	27	23	.....	23	11	4	41	6	.....
Nova Scotia.										
Annapolis County	6	1	.....	.....	1	1	.....	.....	.....	.....
Shelburne "	.....	4	.....	.....	.....	2	.....	.....	.....	.....
Digby "	5	5	.....	.....	.....	.....	.....	.....	.....	.....
*Yarmouth "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
King's "	3	2	1	.....	2	1	.....	.....	.....	.....
Queen's "	2	2	.....	.....	.....	3	.....	.....	.....	.....
Halifax "	12	7	.....	.....	.....	.....	1	.....	.....	.....
Hants "	2	7	1	.....	7	.....	.....	.....	.....	.....
Colchester "	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Cumberland "	6	5	4	.....	3	3	.....	.....	.....	.....
Pictou "	4	5	.....	.....	.....	.....	.....	.....	.....	.....
Antigonish and Guysborough Counties	10	15	.....	.....	.....	.....	5	.....	.....	.....
Richmond County	7	8	.....	.....	.....	.....	.....	.....	1	.....
Inverness "	10	9	.....	.....	1	1	.....	.....	2	.....
Victoria "	5	8	.....	.....	.....	2	.....	.....	.....	.....
*Cape Breton "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lunenburg "	.....	10	.....	.....	.....	4	.....	.....	.....	.....
Total	72	89	6	.....	14	17	6	.....	3	.....

British Columbia.											
Cowichan Agency	24	209	4		67						
West Coast "	397										
Kwawkewlth "	166				2	3					
Lower Fraser "	301	300	280	1	269	91	8	51	1		
Williams Lake Agency			183			34		19			
Kamloops-Okanagan Agency	18	24	607	2	105	74	93	295	5		
Kootenay "	86	25	20		16			22			
Northwest Coast "	114	14	16		19	5	51	185	2		
Babine and Upper Skeena River Agency	225		58		50		18	113			
Total	1,331	572	1,168	3	528	207	170	685	8		
Manitoba.											
Clandeboye Agency			4		209	9	72	11	8		
Portage la Prairie Agency	45		35		39	3	3	3	2		
Manitowapah "	30		44		161	11	63	21	18		
Rat Portage (Buffalo Bay Band) Agency			3								
Berens River Agency					166		27				
The Pas Agency			2		74		14		5		
Total	75		48		649	23	79	35	33		

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued*

PERSONALTY OF INDIANS.

Agency.	Agricultural Implements, Vehicles, &c.										
	Ploughs.	Harrows.	Seed Drills.	Cultivators.	Land Rollers.	Mowers.	Reapers.	Horse Rakes.	Fanning Mills.	Threshing Machines	Tool Chests.
New Brunswick.											
Richibucto Superintendency	22	15	...	1	...	4	...	3	...	...	8
Fredericton "	31	33	...	17	5	1	...	7	2	...	...
Total	53	48	...	18	5	5	...	10	2	...	8
Prince Edward Island.											
Prince Edward Island Superintendency	10	12	...	2	2	...	...	...	1	1	5
Nova Scotia.											
Annapolis County	1	1	...	...	...	...	...	...	...	...	...
Shelburne "	2	1	...	...	...	...	...	...	...	...	...
Digby "	...	...	...	...	...	...	...	...	...	...	...
*Yarmouth "	...	...	...	...	...	...	...	...	...	...	...
King's "	1	1	...	...	...	...	...	...	...	...	1
Queen's "	1	1	...	...	...	...	...	...	...	...	...
Halifax "	...	...	...	...	...	...	...	...	...	...	...
Hants "	2	1	5	...	1	...	...	...	...	...	9
Colchester, "	...	...	...	...	...	...	...	...	...	...	...
Cumberland "	1	1	...	...	...	...	...	...	...	...	...
Pictou "	2	1	...	1	...	...	...	...	...	...	...
Antigonish and Guysborough Counties	1	...	...	...	...	...	...	...	...	...	...
Richmond County	2	1	...	...	...	...	...	...	...	...	...
Inverness "	2	5	...	2	...	...	...	...	1	...	...

Victoria "	2	2									
*Cape Breton "											
Lunenburg "	3	2			1			1			
Total	25	17	5	3	2			1	1		10
British Columbia.											
Cowichan Agency	151	87		1	3	29	7	17	4	10	
West Coast "											
Kwawkewlth "											
Lower Fraser "	112	95	1	4		24	3	4		2	
Williams Lake "	143	72			79	46	4	29	14	1	
Kamloops-Okanagan Agency	507	353	3	9	265	112	16	88	26	4	
Kootenay Agency	82	23				24	4	15	2	1	
Northwest Coast Agency											122
Babine and Upper Skeena River Agency											
Total	995	630	4	14	347	235	34	153	46	18	122
Manitoba.											
Clandeboye Agency	46	51				51		45			10
Portage la Prairie Agency	26	13	4			13	5	11	2		8
Manitowapah "	26	22				31		26			8
Rat Portage " (Buffalo Bay Band)	1	1									
Berens River "	48	29									9
The Pas "	13	12				2		2			4
Total	160	128	4			97	5	84	2		34

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Agricultural Implements, Vehicles, &c.							Value of Implements and Vehicles.
	Other Implements.	Wagons.	Carts.	Sleighs, Draught.	Sleighs, Driving.	Democrat Wagons.	Buggies and Road Carts.	
								$ cts.
New Brunswick.								
Richibucto Superintendency	565	20	2	38	10	9	13	2,275 00
Fredericton "	248	31	....	32	27	1	.....	3,225 00
Total	813	51	2	70	37	10	13	5,500 00
Prince Edward Island.								
Prince Edward Island Superintendency	111	4	7	12	3	... .	... . .	810 00
Nova Scotia.								
Annapolis County	12	1	....	1	....	.....	....	40 00
Shelburne "	30	.....	... ...	.....	... .	.....	.....	55 00
Digby "	50	.....	.....	.....	.....	... . ..	.....	20 00
*Yarmouth "	.... ..	.....	.....	.....	... .	.....	.....	.....
King's "	....	1	1	1	1	.....	.....	50 00
Queen's "	3	1	1	1	.....	.....	.....	60 00
Halifax "	11	3	.....	2	.... .	... .	.....	95 00
Hants "	50	3	. .. .	4	6	4	6	1,800 00
Colchester "	4	...	.....	.....	... .	.....	.....	2 50
Cumberland "	22	3	.....	4	3	1	3	275 00
Pictou "	..... .	6	2	4	2	.....	..... .	400 00
Antigonish and Guysborough Counties	... .	1	2 2	3	... .	....	.....	80 00
Richmond County	30	2	1	6	3	... .	.....	100 00
Inverness "	140	....	5	5	3	.....	4	370 00
Victoria "	120	1	3	3	... .	.. ..	1	450 00
*Cape Breton "	.....	.....	.....	.....	.....	.....	.....	.....
Lunenburg "	14	5	2	2	1	.....	.....	175 00
Total	486	27	17	36	19	5	14	3,972 50

British Columbia.								
Cowichan Agency	4,120	150	2	13	9	28	.....	23,070 00
West Coast "	400	.....	.....	.....	.....	.....	11	880 00
Kwawkewlth Agency	535	.....	.....	.....	.....	.....	.....	367 50
Lower Fraser "	1,986	88	6	9	4	.....	1	14,336 00
Williams Lake "	602	78	.....	140	11	11	7	19,646 50
Kamloops-Okanagan Agency	1,923	208	3	321	67	44	59	52,601 50
Kootenay Agency	160	44	.....	49	1	7	1	9,796 00
Northwest Coast Agency	2,080	.....	.....	.....	.....	.....	.....	5,330 00
Babine and Upper Skeena River Agency	7,021	.....	.....	.....	.....	.....	.....	2,151 00
Total	18,827	568	11	532	92	90	79	128,178 50
Manitoba.								
Clandeboye Agency	165	64	5	72	6	3	12	9,200 00
Portage la Prairie Agency	300	27	27	21	32	6	22	3,900 00
Manitowapah "	585	36	38	44	83	6	76	5,125 00
Rat Portage (Buffalo Bay Band) Agency	13	.....	.....	.....	.....	.....	.....	21 50
Berens River Agency	1,125	1	.....	.....	.....	.....	.....	1,729 00
The Pas "	396	3	2	1	.....	.....	.....	965 00
Total	2,584	131	72	138	121	15	110	20,940 50

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Live Stock and Poultry.											
	Horses.			Cattle.					Other Stock.			
	Stallions and Geldings.	Mares.	Colts, Fillies and Foals.	Bulls.	Oxen, Work.	Steers.	Cows, Milch.	Young Stock.	Sheep.	Lambs.	Boars, Breeding.	
New Brunswick.												
Richibucto Superintendency	15	14	1	1	.....	12	40	55	.....	.....	.....	
Fredericton "	20	11	6	.....	.....	6	16	33	.....	.....	5	
Total	35	25	7	1	.....	18	56	88	.....	.....	5	
Prince Edward Island.												
Prince Edward Island Superintendency	8	5	3	.....	.....	3	18	27	6	6	.....	
Nova Scotia.												
Annapolis County	.....	.....	.....	.....	2	.....	.....	1	.....	.....	.....	
Shelburne "	.....	.....	.....	.....	.....	.....	3	3	.....	.....	.....	
Digby "	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	
*Yarmouth "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
King's "	1	.....	1	.....	.....	2	2	2	.....	.....	.....	
Queen's "	1	.....	.....	.....	4	4	5	4	10	5	.....	
Halifax "	3	.....	.....	.....	.....	.....	4	1	.....	.....	.....	
Hants "	2	3	1	.....	.....	2	11	25	.....	.....	.....	
Colchester "	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	
Cumberland "	.....	3	1	.....	.....	.....	3	1	.....	.....	.....	
Pictou "	4	1	.....	.....	.....	.....	2	1	.....	.....	.....	
Antigonish and Guysborough Counties	.....	2	.....	.....	.....	4	5	3	15	.....	.....	
Richmond County	.....	3	.....	1	.....	14	5	.....	.....	.....	.....	
Inverness "	1	5	.....	1	.....	1	24	19	.....	.....	.....	
Victoria "	1	2	.....	.....	.....	2	10	18	2	.....	.....	

*Cape Breton "											
Lunenburg "	3	1	1		4	8	18	11	15	30	
Total	16	22	4	2	10	37	95	94	72	35	
British Columbia.											
Cowichan Agency	166	178	98	8	32	57	342	310	1,035	626	
West Coast "	11	17	8	10		3	40	50			
Kwawkewlth "	2						1	4			
Lower Fraser "	278	281	111	45	72	88	693	469	307	184	48
Williams Lake "	1,238	588	544	13		150	330	251			18
Kamloops-Okanagan Agency	2,979	3,273	3,186	44		165	829	1,182	17	21	26
Kootenay Agency	960	810	690	30		60	630	670			
Northwest Coast Agency	28	34	20	16	8	36	50	41	4	6	4
Babine and Upper Skeena River Agency	414	60	24	26		23	254	166			
Total	6,076	5,241	4,681	192	112	582	3,169	3,143	1,363	1,137	96
Manitoba.											
Clandeboye Agency	49	70	73	10	134	77	193	162	10	7	15
Portage la Prairie Agency	75	63	29	4	32	21	48	54	3	1	
Manitowapah "	118	68	43	13	55	91	380	513			
Rat Portage (Buffalo Bay Band) Agency	2	2			2						
Berens River Agency	6	9	2	21	83	47	129	67			
The Pas "	12	11	16	9	19	36	108	55			
Total	262	223	163	57	325	275	858	851	13	8	15

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS.—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Live Stock and Poultry.							General Effects.		
	Other Stock—*Con.*		Poultry.				Value of Live Stock and Poultry.			
	Sows, Breeding.	Pigs.	Turkeys.	Geese.	Ducks.	Cocks and Hens.		Sail Boats.	Row Boats.	Canoes.
							$ cts.			
New Brunswick.										
Richibucto Superintendency		21		10	45	255	2,860 00	39	25	60
Fredericton "	11	86		10		560	3,340 00		4	111
Total	11	107		20	45	815	6,200 00	39	29	171
Prince Edward Island.										
Prince Edward Island Superintendency		12		30		173	1,570 00	3	25	1
Nova Scotia.										
Annapolis County		1	3		2	5	100 00			7
Shelburne "		2			7	43	125 00		3	2
Digby "							48 00			10
*Yarmouth "										
King's "		1				12	150 00		1	1
Queen's "		5					300 00			7
Halifax "						30	235 00	1	2	
Hants "	4	10				30	1,575 00	1	2	2
Colchester "						30	41 50			
Cumberland "		2				35	225 00			2
Pictou "						20	300 00	1	2	
Antigonish and Guysborough Counties		2				50	250 00	1	3	
Richmond County		2				30	425 00	5	7	

Inverness "		1				60	1,000 00	4	14	
Victoria "		2				70	480 00	1	11	
*Cape Breton "										
Lunenburg "		6	10	16	10	20	850 00			4
Total	4	34	13	16	19	435	6,104 50	14	45	35
BRITISH COLUMBIA.										
Cowichan Agency	1	4		272	460	4,425	39,930 00	183	1	444
West Coast "					14	666	3,907 00	21	10	1,281
Kwawkewlth "	2	7	4			196	287 50	17	26	420
Lower Fraser "	252	1,947		20	974	2,821	61,449 00	106	158	462
Williams Lake Agency	47	692	4	4	5	2,490	95,334 00		17	93
Kamloops-Okanagan Agency	253	619		18	21	2,438	145,636 00	4	48	145
Kootenay Agency						295	89,119 00			42
Northwest Coast Agency	7	26			15	1,556	7,772 00	290	286	1,470
Babine and Upper Skeena River Agency							47,750 00			357
Total	562	3,295	8	314	1,492	14,887	491,184 50	621	546	4,714
MANITOBA.										
Clandeboye Agency	6	42	6			643	33,000 00	8	203	39
Portage la Prairie Agency	2	5				50	7,200 00		8	3
Manitowapah Agency	7	3				152	28,885 00	25	68	84
Rat Portage (Buffalo Bay Band) Agency							230 00	1		15
Berens River Agency							14,405 00	12	318	374
The Pas Agency						12	5,185 00		18	241
Total	15	50	6			857	88,905 00	46	615	756

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	General Effects.						Household Effects.	
	Rifles.	Shot Guns.	Nets.	Steel Traps.	Tents.	Value of.	Value of	Value of Real and Personal Property.
New Brunswick.						$ cts.	$ cts.	$ cts.
Richibucto Superintendency	6	157	339	116	8	6,600 00	8,400 00	83,810 00
Fredericton "	59	49	3	442	29	3,390 00	7,300 00	71,848 00
Total	65	206	342	558	37	9,990 00	15,700 00	155,658 00
Prince Edward Island.								
Prince Edward Island Superintendency	8	13	8	19	.....	525 00	2,880 00	11,000 00
Nova Scotia.								
Annapolis County	3	10	5	12	.....	50 00	100 00	1,390 00
Shelburne "	3	8	.....	.....	.....	165 00	200 00	1,895 00
Digby "	9	6	.....	20	3	300 00	300 00	4,743 00
*Yarmouth "	.....	.....	.....	.....	.....	.....	.....	.....
King's "	.....	20	.....	20	2	150 00	200 00	2,150 00
Queen's "	6	6	8	12	1	225 00	175 00	2,535 00
Halifax "	.....	8	12	.....	6	150 00	150 00	4,130 00
Hants "	7	14	12	120	.....	1,500 00	3,000 00	21,970 00
Colchester "	3	12	.....	20	1	85 00	216 00	1,920 00
Cumberland "	11	16	.....	48	.....	260 00	800 00	4,310 00
Pictou "	.....	6	3	.....	.....	19 00	60 00	250 00
Antigonish and Guysborough Counties	.....	25	.....	5	.....	150 00	1,500 00	9,240 00
Richmond County	.....	7	.....	10	.....	670 00	150 00	20,940 00
Inverness "	.....	16	3	75	.....	195 00	700 00	16,415 00
Victoria "	.....	12	.....	91	.....	400 00	500 00	13,322 00
*Cape Breton "	.....	.....	.....	.....	.....	.....	.....	.....

Lunenburg "	3	7	..	17	4	200 00	175 00	5,575 00
Total	45	173	23	45	20	4,519 00	8,226 00	114,085 00
British Columbia.								
Cowichan Agency	344	306	50	21	127	26,135 00	31,675 00	914,890 00
West Coast "	86	418	122	229	117	34,036 00	34,700 00	194,050 00
Kwawkewlth "	123	221	197	1,566	.....	13,932 00	50,600 00	118,343 50
Lower Fraser "	430	457	163	1,191	450	45,326 00	59,958 00	1,142,539 00
Williams Lake Agency	407	129	156	1,240	235	12,481 00	13,939 00	366,938 00
Kamloops-Okanagan Agency	678	272	470	1,521	1,020	21,001 00	46,100 00	2,089,786 42
Kootenay "	150	23	....	131	137	3,572 00	3,050 00	267,690 00
Northwest Coast "	1,136	352	285	6,035	.....	105,110 00	93,000 00	742,763 00
Babine and Upper Skeena River Agency	636	357	96	2,456	59	47,455 00	18,365 00	284,625 00
Total	3,990	2,535	1,539	14,390	2,145	309,048 00	351,387 00	6,121,624 92
Manitoba.								
Clandeboye Agency	26	153	437	1,338	244	14,000 00	15,100 00	410,967 00
Portage la Prairie Agency	11	35	27	605	84	1,150 00	625 00	213,293 00
Manitowapah "	29	167	402	2,034	185	5,800 00	5,400 00	172,220 00
Rat Portage (Tuffalo Bay Band) Agency	....	4	6	30	3	232 00	100 00	5,571 50
Berens River Agency	38	369	1,342	2,267	329	26,554 00	19,419 00	45,973 00
The Pas "	23	228	301	3,348	154	6,544 00	3,525 00	93,028 00
Total	127	956	2,515	9,622	999	54,280 00	44,169 00	941,052 50

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901.

Agency.	Grain, Roots and Fodder.									
	Wheat.		Oats.		Barley.		Corn.		Pease.	
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.
New Brunswick.										
Richibucto Superintendency	36	340	218	2,235					½	5
Fredericton "	3	75	113	2,670			⅛	6	5	101
Total	39	415	331	4,905			⅛	6	5½	106
Prince Edward Island.										
Prince Edward Island Superintendency	19	303	48	780			¼	6	¼	4
Nova Scotia.										
Annapolis County										
Shelburne "							⅛	8	⅛	6
Digby "			1½	20						
*Yarmouth "										
King's "			2	60						
Queen's "			1½	35						
Halifax "										
Hants "			22	400						
Colchester "			2½	16						
Cumberland "			3½	+						
Pictou "	2		10		1					
Antigonish and Guysborough Counties	1	12	3	60						
Richmond County			½	15						
Inverness "			4	50			2	30		
Victoria "			2½	35						

*Cape Breton "										
Lunenburg "	1	20	5	100	1	18				
Total	4	32	58	791	2	18	2½	38	‡	6
British Columbia.										
Cowichan Agency	30	905	473	17,680					34	820
West Coast "										
Kwawkewlth "										
Lower Fraser "	92	3,655	451	35,880	3	100	21½	1,260	180	7,130
Williams Lake Agency	247	5,180	372	17,345	10	295	1¼	42	34½	750
Kamloops-Okanagan Agency	1,698	29,695	1,746	30,800	17	350	15½	†	87	1,610
Kootenay Agency	55	864	700	11,900						
Northwest Coast Agency										
Babine and Upper Skeena River Agency			23	†	7	†				
Total	2,122	40,299	3,765	113,605	37	745	38¼	1,302	335½	10,310
Manitoba.										
Clandeboye Agency	84	1,265	54½	1,090	34	865	23	680		
Portage la Prairie Agency	257	4,324	66	1,600	8	300	2	40		
Manitowapah Agency			2	60			¾	15		
Rat Portage (Buffalo Bay Band) Agency							‡	70		
Berens River Agency					5	135				
The Pas Agency										
Total	341	5,589	122½	2,750	47	1,300	25¾	805		

* No returns. † Used for fodder. ‡ Not given.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901—*Continued.*

Agency.	Grain, Roots and Fodder—*Con.*									
	Rye.		Buckwheat.		Beans.		Potatoes.		Carrots.	
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.
New Brunswick.										
Richibucto Superintendency			16	160			193	4,375		
Fredericton "			47	1,317	6⅝	97	59¼	3,390		
Total			63	1,477	6⅝	97	252¼	7,765		
Prince Edward Island.										
Prince Edward Island Superintendency					⅛	2½	16½	1,442		
Nova Scotia.										
Annapolis County							2½	125		
Shelburne "					[illegible]	9	1	165	[illegible]	12
Digby "							3½	260		
*Yarmouth "										
King's "			1	30	1	40	5	600		
Queen's "			½	12			3⅗	320		
Halifax "							1¾	[illegible]		
Hants "					¼	45	12	1,500		
Colchester "							2	150		
Cumberland "							8	[illegible]		
Pictou "			½				8			
Antigonish and Guysborough Counties					1	100	4	175		
Richmond County							6	525		
Inverness "							24	1,450		

Victoria County							9	730		
*Cape Breton County										
Lunenburg "	2½	50	1	17	½	7	6	740		
Total	2½	50	3	59	3	203	98¾	6,740	½	12
British Columbia.										
Cowichan Agency							115	5,615		
West Coast "							†	737	†	86
Kwawkewlth "							4	380		
Lower Fraser "					18¼	681	268	46,807	16½	2,108
Williams Lake "					4½	140	168	11,525	24½	1,028
Kamloops-Okanagan Agency					80	1,685	258	31,050	33½	4,950
Kootenay Agency	5	†					85	10,300		
Northwest Coast Agency							89½	10,530	3	250
Babine and Upper Skeena River Agency							272	44,310		
Total	5				103¼	2,506	1,259½	161,254	77½	8,422
Manitoba.										
Clandeboye Agency					4	100	176½	16,750	1¼	38
Portage la Prairie Agency					1	11	9½	985	1	55
Manitowapah "					¾	4	51	3,503	1½	39
Rat Portage (Buffalo Bay Band) Agency							†	90		
Berens River Agency							186	8,990		
The Pas Agency							53	3,931		
Total					5¾	115	476	34,249	3¾	132

* No returns. † Not given.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901—*Continued.*

Agency.	Grain, Roots and Fodder—*Con.*							New Land Improvements.			
	Turnips.		Other Roots.		Hay.						
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Cultivated.	Wild.	Other Fodder.	Land Cleared.	Land Broken.	Land Cropped for first time.	Land Fenced.
New Brunswick.					Tons.	Tons.	Tons.	Acres.	Acres.	Acres.	Acres.
Richibucto Superintendency	4	95	.....	.....	122	23	192	17	17	17	17
Fredericton "	4¼	500	6	318	146	10	67	.....	.....	.....	5
Total	8¼	595	6	318	268	33	259	17	17	17	22
Prince Edward Island.											
Prince Edward Island Superintendency	1	181	.....	.....	25½	26	57	7	7	7	7
Nova Scotia.											
Annapolis County	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
Shelburne "	½	14	1	31	6½	.....	.....	.....	.....	.....	.....
Digby "	.....	.....	½	7	10	.....	.....	.....	.....	.....	.....
*Yarmouth "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
King's "	.....	.....	.....	.....	5	10	2	.....	.....	.....	.....
Queen's "	.....	.....	.....	.....	30	12	.....	.....	½	.....	1
Halifax "	.....	.....	.....	.....	18½	10	.....	.....	.....	.....	.....
Hants "	1	255	1	100	125	70	20	4	2	4	5
Colchester "	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
Cumberland "	½	†	.....	.....	4	3	.....	.....	.....	.....	.....
Pictou "	.....	.....	.....	.....	7	.....	.....	.....	.....	.....	.....
Antigonish and Guysborough Counties	1	200	.....	.....	50	3	.....	.....	2	2	.....
Richmond County	.....	.....	.....	.....	40	20	.....	1	½	1	1
Inverness "	⅛	10	.....	.....	135	.....	.....	5	5	5	15

Victoria "					90	120	3	4	2	3	5
*Cape Breton "											
Lunenburg "	1	150	½	15	60	25	10	3	1½	3½	7½
Total	3¾	629	2¾	153	588	273	35	17	13½	18½	34½
British Columbia.											
Cowichan Agency					973			5	16		
West Coast "					4	9		2			
Kwawkewlth "											
Lower Fraser Agency	33½	5,512			668	944	432	15	15	15	29
Williams Lake "	28¼	1,424	11½	506	522	1,202	926	55	15	15	120
Kamloops-Okanagan Agency	22	3,325			3,160	619	635	85	147	152	13,004
Kootenay "					270	265	50	135	135	135	135
Northwest Coast "	12½	1,425	6	670	24	50	7				
Babine and Upper Skeena River Agency	59	9,660			88	256		36	32	31	99
Total	155¼	21,346	17½	1,176	5,709	3,345	2,050	333	360	348	13,387
Manitoba.											
Clandeboye Agency	3	23	3	23	5	6,200		62	30½	11½	19
Portage la Prairie Agency	1½	55	¾	45		650			93		
Manitowapah "	1¼	98	½	28		3,138			6		13
Rat Portage (Buffalo Bay Band) Agency						11					
Berens River Agency						842				14	14
The Pas "						302		6	3½	1	5
Total	3½	176	1¼	96	5	11,143		68	133	26½	51

* No returns. † Not given.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PROGRESS DURING THE FISCAL YEAR ENDED JUNE 30, 1902.

Agency.	Buildings Erected.										
	Dwellings, Stone.	Dwellings, Brick.	Dwellings, Frame.	Dwellings, Log.	Shanties.	Barns.	Horse Stables.	Driving Sheds.	Cattle Stables.	Pig Sties.	Store Houses.
New Brunswick.											
Richibucto Superintendency			9			5	4				
Fredericton "			4	1	3				1	1	
Total			13	1	3	5	4		1	1	
Prince Edward Island.											
Prince Edward Island Superintendency			2			2					
Nova Scotia.											
Annapolis County			1								
Shelburne "			1								
Digby "											
*Yarmouth "											
King's "											
Queen's "			2							2	
Halifax "											
Hants "			1								
Colchester "						1					
Cumberland "					3	1				2	
Pictou "			1		1						
Antigonish and Guysborough Counties			4		2						
Richmond County			1							1	
Inverness "			3			1					
Victoria "			2			1					

*Cape Breton "												
Lunenburg "			2			1				1		
Total			18		6	5				6		
British Columbia.												
Cowichan Agency			16									
West Coast "			17									
Kwawkewlth "												
Lower Fraser "			2									
Williams Lake "				14								
Kamloops-Okanagan Agency			9	12			1					
Kootenay "												
Northwest Coast "												
Babine and Upper Skeena River Agency			17	14	10				1			8
Total			61	40	10		1		1			8
Manitoba.												
Clandeboye Agency			2	4								
Portage la Prairie Agency				4					6			
Manitowapah "				22					17			8
Rat Portage " (Buffalo Bay Band)												
Berens River "				8								
The Pas "				21					5			3
Total			2	59					28			11

*No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PROGRESS DURING THE FISCAL YEAR ENDED JUNE 30, 1902—*Continued.*

Agency.	Buildings Erected.			Increase in Value.		
	Root Houses.	Milk Houses.	Corn Cribs.	Value of Clearing, Cultivating and Fencing.	Value of Buildings.	Increased Value of Agricultural Products and Industries.
New Brunswick.				$ cts.	$ cts.	$ cts.
Richibucto Superintendency				120 00	600 00	720 00
Fredericton "	1			50 00	610 00	660 00
Total	1			170 00	1,210 00	1,380 00
Prince Edward Island.						
Prince Edward Island Superintendency				95 00	295 00	390 00
Nova Scotia.						
Annapolis County					100 00	100 00
Shelburne "					50 00	50 00
Digby "						
*Yarmouth "						
King's "						
Queen's "				15 00	275 00	290 00
Halifax "						
Hants "				1,000 00	100 00	1,100 00
Colchester "				40 00		40 00
Cumberland "					80 00	80 00
Pictou "				50 00	175 00	225 00
Antigonish and Guysborough Counties				20 00	150 00	170 00
Richmond County		1		10 00	75 00	85 00
Inverness "				300 00	300 00	600 00
Victoria "				80 00	180 00	560 00

*Cape Breton "					
Lunenburg "			100 00	200 00	300 00
Total	1		1,615 00	1,985 00	3,600 00
British Columbia.					
Cowichan Agency			700 00	2,450 00	3,150 00
West Coast "			70 00	4,060 00	4,130 00
Kwawkewlth "					
Lower Fraser "			710 00	1,000 00	1,710 00
Williams Lake Agency			610 00	1,450 00	2,060 00
Kamloops-Okanagan Agency			25,825 00	4,250 00	30,075 00
Kootenay Agency			2,553 00	950 00	3,503 00
Northwest Coast Agency					
Babine and Upper Skeena River Agency	9		1,191 00	5,380 00	6,571 00
Total	9		31,659 00	19,540 00	51,199 00
Manitoba.					
Clandeboye Agency			370 00	1,200 00	1,570 00
Portage la Prairie Agency			279 00	220 00	499 00
Manitowapah Agency			55 00	1,300 00	1,355 00
Rat Portage (Buffalo Bay Band) Agency					
Berens River Agency			4,000 00	400 00	4,400 00
The Pas "			85 00	1,665 00	1,750 00
Total			4,789 00	4,785 00	9,574 00

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

SOURCES AND VALUE OF INCOME.

Agency.	Value of Farm Products, including Hay.	Wages Earned.	Received from Land Rentals.	The Estimated Value of Fish and Meat used for Food is included in these columns.		Earned by Other Industries.	Total Income of Indians.
				Earned by Hunting.	Earned by Fishing.		
New Brunswick.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Richibucto Superintendency	4,925 00	15,150 00		8,500 50	525 00	6,650 00	35,750 50
Fredericton "	6,016 00	26,500 00	20 00	270 00	6,875 00	10,250 00	49,931 00
Total	10,941 00	41,650 00	20 00	8,770 50	7,400 00	16,900 00	85,681 50
Prince Edward Island.							
Prince Edward Island Superintendency	1,698 00	350 00		490 00	84 00	15,780 00	18,402 00
Nova Scotia.							
Annapolis County	100 00	650 00		50 00	220 00	300 00	1,320 00
Shelburne "	293 30	2,445 00			590 00	245 00	3,573 30
Digby "	202 00	1,000 00		75 00	700 00	500 00	2,477 00
*Yarmouth "							
King's "	500 00	2,000 00		50 00	200 00	150 00	2,900 00
Queen's "	550 00	250 00		600 00	710 00	600 00	2,710 00
Halifax "	355 00	2,750 00		200 00	200 00	2,100 00	5,605 00
Hants "	2,500 00	500 00		100 00	1,000 00	2,500 00	6,600 00
Colchester "	116 60	2,300 00		50 00	400 00	1,425 00	4,291 60
Cumberland "	1,500 00	2,500 00		15 00	750 00	1,000 00	5,765 00
Pictou "	600 00	2,000 00		300 00		3,000 00	5,900 00
Antigonish and Guysborough Counties	700 00	1,000 00	6 00	400 00	50 00	5,300 00	7,456 00
Richmond County	935 25	1,044 00		500 00	100 00	1,700 00	4,279 25
Inverness "	2,200 00	3,300 00	95 00	350 00	85 00	1,300 00	7,330 00
Victoria "	2,180 00	900 00		410 00	400 00	3,000 00	6,890 00
*Cape Breton "							

Lunenburg "	1,540 00	3,550 00	..	700 00	500 00	400 00	6,690 00
Total	14,272 15	26,189 00	101 00	3,800 00	5,905 00	23,520 00	73,787 15
British Columbia.							
Cowichan Agency	29,175 00	24,935 00		51,740 00	4,580 00	2,160 00	112,590 00
West Coast "	623 80	11,550 00		35,150 00	4,360 00	61,166 00	112,849 80
Kwawkewlth "	210 00	32,115 00		23,950 00	7,405 00	7,100 00	70,780 00
Lower Fraser "	47,653 25	92,330 00	272 90	95,020 30	62,292 40	51,121 25	348,990 10
Williams Lake Agency	54,142 75	29,000 00		13,840 00	10,280 00	12,595 00	119,857 75
Kamloops-Okanagan Agency	96,234 00	126,200 00		33,900 00	33,900 00	32,500 00	322,734 00
Kootenay Agency	20,072 00	3,800 00		720 00	3,300 00	1,000 00	28,892 00
Northwest Coast Agency	16,641 00	8,925 00	50 00	155,620 00	31,460 00	32,060 00	244,756 00
Babine and Upper Skeena River Agency	13,422 00	37,805 00		41,210 00	45,914 00	33,495 00	171,846 00
Total	278,173 80	366,660 00	322 90	451,150 30	203,491 40	233,497 25	1,533,295 65
Manitoba.							
Clandeboye Agency	19,000 00	65,000 00		85,000 00	6,000 00	4,500 00	179,500 00
Portage la Prairie Agency	4,396 00	3,800 00		425 00	2,450 00	2,900 00	13,971 00
Manitowapah "	7,203 00	4,987 00		4,974 00	9,310 00	4,190 00	30,664 00
Rat Portage (Buffalo Bay Band) Agency	175 00	600 00		140 00	300 00	125 00	1,340 00
Berens River Agency	13,180 00			13,074 00	20,200 00	14,276 00	60,730 00
The Pas "	3,892 00	3,625 00		3,568 00	30,663 00	825 00	42,573 00
Total	47,846 00	78,012 00		107,181 00	68,923 00	26,816 00	328,778 00

* No returns.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

REALTY OF INDIANS.

Agency.	Land.		Public Buildings, Property of the Band.						Private Fencing and Buildings.												
	Cleared, including natural pasturage.	Cultivated, including made pasturage.	Churches.	Council Houses.	School Houses.	Driving Sheds.	Other Buildings.	Ferries.	Acres Fenced.	Dwellings, Frame.	Dwellings, Log.	Shanties.	Barns.	Horse Stables.	Driving Houses.	Cattle Stables.	Pig Sties.	Store Houses.	Root Houses.	Milk Houses.	Corn Cribs.
Northwest Territories.	Acres.	Acres.																			
Touchwood Hills Agency, Treaty No. 4	91,477	584	1	1	3	2	..	..	598	..	105	7	6	51	..	116	..	18	1	4	
Birtle " " 4	49,377⅓	14,475	4	....	2	1	3	....	12,882	13	114	50	1	82	9	128	6	42	18	4	..
Pelly " " 4	47,337	440	3	....	3	3	14	1	266	..	58	23	....	38	...	92	..	19	5	10	..
Qu'Appelle " " 4	163,839	2,922	..	....	..	..	..	..	2,281½	..	174	..	..	61	..	155	2	..	2	1	3
Assiniboine " " 4	22,969	525	....	..	..	..	..	..	525	...	50	....	..	5	..	31	..	..	..	..	..
Crooked Lakes " " 4	161,461	1,015	....	....	..	..	1	..	1,670	....	115	4	....	13	..	87	6	18	108	10	..
Moose Mountain " " 4	10,570	218	....	....	1	....	..	..	1,280	....	48	..	..	9	....	48	..	..	..	..	..
Pine Creek " " 4	6,215	20	1	....	2	....	1	..	8	....	46	....	....	4	....	18	1	....	11	..	..
Saddle Lake " " 6	73,600	260	....	....	4	....	2	..	1,230	....	140	..	....	..	....	126	..	16	1	..	..
Hobbema " " 6	68,600	1,260	....	....	1	....	1	..	838	....	81	18	....	43	..	31	5	20	55	..	..
Battleford " " 6	167,642	1,434	....	....	..	....	..	....	2,571	...	193	....	..	15	....	154	36	12	66	..	..
Onion Lake " " 6	102,360	141	....	....	1	..	..	..	165	1	87	....	..	..	....	83	..	..	..	..	..
Duck Lake " " 6	98,207	1,121	2	....	2	....	....	1	1,485	...	115	....	..	12	...	153	7	37	....	5	..
Edmonton " " 6	41,398	2,050	....	....	..	....	1	....	21,748	....	98	1	1	29	..	100	11	28	7	3	..
Carlton " " 6	139,012	956	2	....	8	....	4	....	1,456½	....	80	186	1	49	..	138	1	29	16	6	..
Sarcee " " 7	38,895	225	1		1	....	1	....	325	1	48	..	....	20	....	..	..	..	..	..	..
Blood " " 7	349,275½	51½	....		3	....	2	..	700	1	200	....	....	70	....	100	....	..	18	....	..
Blackfoot " " 7	300,024¾	175¾	....		....	..	....	..	3,700	4	126	..	....	32	....	32	....	..	1	1	....
Peigan " " 7	114,016	1,280	....	....	1	....	3	..	1,280	10	94	....	....	33	....	21	....	1	20	2	....
Stony " " 7	45,545	175	1	....	2	1	..	....	10,950	....	124	....	....	37	..	18	....	..	20	....	....
Total	2,081,220¼	29,328¼	15	1	34	7	33	2	65,959	30	2,096	289	9	603	9	1,631	75	237	346	46	3

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS.

Agency.	Agricultural Implements, Vehicles, &c.										
	Ploughs.	Harrows.	Seed Drills.	Cultivators.	Land Rollers.	Mowers.	Reapers.	Horse Rakes.	Fanning Mills.	Threshing Machines.	Tool Chests.
Northwest Territories.											
Touchwood Hills Agency, Treaty No. 4	9	3	3	1	.....	40	4	40	.....	2	3
Birtle " " 4	119	71	26	9	3	55	30	45	9	1	2
Pelly " " 4	47	22	3	.....	.....	34	2	32	1	1	.....
Qu'Appelle " " 4	138	63	11	2	2	63	14	46	7	8	5
Assiniboine " " 4	35	9	2	.....	.....	9	.....	6	1	.....	.....
Crooked Lakes " " 4	94	47	11	.....	11	38	13	25	6	.....	.....
Moose Mountain " " 4	25	18½	1	.....	1	10	3	9	1	.....	.....
Pine Creek " " 4	4	2	.....	.....	.....	3	.....	2	.....	.....	1
Saddle Lake " " 6	31	10	1	.....	.....	26	1	24	.....	.....	.....
Hobbema " " 6	98	44	3	2	5	28	4	15	1	.....	4
Battleford " " 6	146	57	.....	.....	.....	63	10	38	5	1	1
Onion Lake " " 6	38	15	.....	.....	.....	20	.....	17	2	.....	1
Duck Lake " " 6	74	35	4	.....	.....	33	7	32	5	.....	6
Edmonton " " 6	65	33	5	2	4	24	6	24	7	2	.....
Carlton " " 6	70	53	.....	.....	.....	25	6	24	3	1	6
Sarcee " " 7	2	.....	1	.....	1	7	.....	4	.....	.....	.....
Blood " " 7	3	2	.....	.....	.....	54	.....	54	.....	.....	7
Blackfoot " " 7	46	19	1	2	2	42	1	31	.....	1	1
Peigan " " 7	30	6	.....	.....	.....	29	.....	29	.....	.....	1
Stony " " 7	10	4	.....	.....	.....	14	.....	14	.....	.....	.....
Total	1,084	513½	72	18	29	617	101	511	48	17	38

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Agricultural Implements, Vehicles, &c.—*Concluded.*							
	Other Implements.	Wagons.	Carts.	Sleighs, Draught.	Sleighs, Driving.	Democrat Wagons.	Buggies and Road Carts.	Value of Implements and Vehicles.
								$ cts.
Northwest Territories.								
Touchwood Hills Agency, Treaty No. 4	281	68	25	45	31	9	10	5,780 00
Birtle " " 4	1,010	114	31	88	56	30	74	18,895 00
Pelly " " 4	355	63	26	52	7	2	20	7,572 00
Qu'Appelle " " 4	1,514	107	49	86	37	18	10	16,965 00
Assiniboine " " 4	35	22	9	20	.....	1	2	2,050 00
Crooked Lakes " " 4	688	59	32	43	.....	.....	38	12,463 00
Moose Mountain " " 4	485	22	11	31	20	6	27	3,060 00
Pine Creek " " 4	70	6	.....	7	25	.....	4	600 00
Saddle Lake " " 6	210	51	25	74	.....	1	16	7,191 00
Hobbema " " 6	626	69	59	69	81	.....	9	8,720 00
Battleford " " 6	1,298	102	35	100	8	7	39	18,320 00
Onion Lake " " 6	600	28	10	25	.....	.....	4	3,775 00
Duck Lake " " 6	1,246	50	26	40	36	1	24	10,600 00
Edmonton " " 6	242	31	27	23	4	2	14	6,501 00
Carlton " " 6	1,425	50	32	73	77	6	20	8,447 50
Sarcee " " 7	160	20	6	12	8	3	4	1,500 00
Blood " " 7	2,000	201	100	225	70	20	50	34,671 00
Blackfoot " " 7	265	85	.....	22	23	7	21	8,981 00
Peigan " " 7	300	105	.....	.....	.....	13	12	7,149 00
Stony " " 7	40	38	.....	36	.....	2	7	4,571 00
Total	12,850	1,291	803	1,071	483	128	435	187,751 50

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Live Stock and Poultry.										
	Horses.			Cattle.					Other Stock.		
	Stallions and Geldings.	Mares.	Colts, Fillies and Foals.	Bulls.	Oxen, Work.	Steers.	Cows, Milch.	Young Stock.	Sheep.	Lambs.	Boars, Breeding.
Northwest Territories.											
Touchwood Hills Agency, Treaty No. 4	85	196	102	17	35	162	377	571	.....	.....	.....
Birtle " " 4	290	238	63	14	30	104	273	396	15	.....	1
Pelly " " 4	51	53	44	15	38	251	235	215	70	.....	.....
Qu'Appelle " " 4	344	310	47	12	56	202	385	545	.....	.....	.....
Assiniboine " " 4	27	53	20	1	38	28	33	67	.....	.....	.....
Crooked Lakes " " 4	140	131	79	11	50	23	209	387	16	.....	.....
Moose Mountain " " 4	83	59	21	6	29	20	87	196	.....	.....	.....
Pine Creek " " 4	9	5	2	3	5	4	41	86	.....	.....	.....
Saddle Lake " " 6	128	107	11	12	62	90	224	285	35	29	.....
Hobbema " " 6	.....	680*	.....	.....	14	61	318	520	.....	.....	.....
Battleford " " 6	.....	482*	.....	23	181	115	611	1,022	203	.....	.....
Onion Lake " " 6	93	90	51	6	72	153	284	288	.....	.....	.....
Duck Lake " " 6	167	62	35	.....	89	215	404	328	44	.....	.....
Edmonton " " 6	61	111	45	12	46	62	187	292	10	.....	.....
Carlton " " 6	111	96	31	12	131	137	257	344	.....	.....	1
Sarcee " " 7	500	500	200	.....	2	11	30	58	.....	.....	.....
Blood " " 7	.....	3,522*	.....	71	.....	690	891	1,496	.....	.....	.....
Blackfoot " " 7	.....	2,453*	.....	17	.....	42	323	722	.....	.....	.....
Peigan " " 7	300	440	400	.....	.....	76	561	750	.....	.....	.....
Stony " " 7	.....	1,000*	.....	11	.....	102	290	240	.....	.....	.....
Total	2,389	10,588	1,151	243	878	2,548	6,020	8,808	393	29	2

* Includes also stallions, geldings, colts, fillies and foals.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Continued.*

Agency.	Live Stock and Poultry—*Con.*							General Effects.		
	Other Stock *Con*		Poultry.				Value of Live Stock and Poultry.			
	Sows, Breeding.	Pigs.	Turkeys.	Geese.	Ducks.	Cocks and Hens.		Sail Boats.	Row Boats.	Canoes.
NORTHWEST TERRITORIES.							$ cts.			
Touchwood Hills Agency, Treaty No. 4	.....	.....	.....	.....	.....	30	36,950 00	.....	.....	1
Birtle " " 4	3	19	6	.....	15	608	36,284 50	.....	4	1
Pelly " " 4	.....	.....	.....	.....	.....	105	26,918 00	.....	1	.....
Qu'Appelle " " 4	.....	14	.....	.....	.....	75	63,374 00	.....	6	.....
Assiniboine " " 4	.....	.....	.....	.....	.....	60	5,500 00	.....	.....	.....
Crooked Lakes " " 4	.....	.....	.....	.....	.....	.....	23,645 00	.....	.....	.....
Moose Mountain " " 4	.....	.....	.....	.....	.....	.....	12,865 00	.....	.....	.....
Pine Creek " " 4	1	8	.....	.....	.....	3	3,395 00	5	5	40
Saddle Lake " " 6	.....	24	.....	.....	.....	.....	22,315 00	1	25	65
Hobbema " " 6	.....	.....	.....	.....	.....	60	27,720 00	.....	.....	3
Battleford " " 6	.....	158	.....	.....	.....	240	62,667 00	.....	4	2
Onion Lake " " 6	.....	.....	.....	.....	.....	20	24,990 00	.....	.....	20
Duck Lake " " 6	.....	4	30	.....	7	503	36,748 25	.....	3	8
Edmonton " " 6	.....	72	29	.....	17	206	24,991 20	.....	.....	11
Carlton " " 6	3	33	.....	.....	.....	89	22,633 50	.....	6	134
Sarcee " " 7	.....	.....	.....	.....	.....	60	23,000 00	.....	.....	.....
Blood " " 7	.....	.....	.....	.....	.....	75	10,950 00	.....	.....	.....
Blackfoot " " 7	.....	.....	.....	.....	.....	.....	56,065 00	.....	12	.....
Peigan " " 7	.....	.....	.....	.....	.....	.....	53,715 00	.....	1	.....
Stony " " 7	.....	.....	.....	.....	.....	.....	31,495 00	.....	.....	.....
Total	7	332	65	.....	39	2,134	505,751 45	6	67	285

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

PERSONALTY OF INDIANS—*Concluded.*

Agency.	General Effects—*Concluded.*						Household Effects.	Value of Real and Personal Property.
	Rifles.	Shot Guns.	Nets.	Steel Traps.	Tents.	Value of.	Value of.	
						$ cts.	$ cts.	$ cts.
Northwest Territories.								
Touchwood Hills Agency, Treaty No. 4	59	90	5	1,576	182	3,802 00	3,293 00	431,752 00
Birtle " " 4	51	109	9	760	166	2,619 00	8,100 00	422,655 00
Pelly " " 4	14	65	4	262	67	1,411 00	3,500 00	220,559 00
Qu'Appelle " " 4	29	91	30	195	173	2,444 75	7,650 00	726,237 75
Assiniboine " " 4	8	25	.....	12	35	320 00	725 00	158,608 35
Crooked Lakes " " 4	2	27	12	6	107	658 00	1,630 00	601,963 00
Moose Mountain " " 4	14	31	6	60	36	731 00	1,500 00	206,752 00
Pine Creek " " 4	11	47	80	600	52	1,250 00	1,200 00	26,650 00
Saddle Lake " " 6	13	104	131	546	104	3,250 00	2,656 00	238,887 00
Hobbema " " 6	20	100	110	249	125	1,490 00	1,825 00	274,355 00
Battleford " " 6	75	104	30	236	175	4,196 00	7,320 00	298,400 00
Onion Lake " " 6	9	90	78	292	151	2,015 00	2,500 00	278,790 00
Duck Lake " " 6	15	94	33	977	97	2,830 50	9,108 00	105,489 75
Edmonton " " 6	14	75	65	275	70	1,708 00	2,100 00	529,032 20
Carlton " " 6	87	206	233	2,122	223	6,700 00	4,137 00	499,883 50
Sarcee " " 7	15	13	.....	30	50	600 00	1,500 00	175,100 00
Blood " " 7	40	10	.....	40	150	1,930 00	6,000 00	1,290,273 50
Blackfoot " " 7	57	30	11	14	255	3,334 00	2,200 00	995,922 75
Peigan " " 7	21	42	.....	.....	95	913 00	3,000 00	556,191 00
Stony " " 7	125	32	5	205	128	3,462 00	10,400 00	201,073 00
Total	679	1,385	842	8,457	2,441	45,664 25	80,344 00	8,238,574 80

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901.

Agency.	Grain, Roots and Fodder.									
	Wheat.		Oats.		Barley.		Corn.		Pease.	
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.
Northwest Territories.										
Touchwood Hills Agency, Treaty No. 4	23	535	140	5,532	12	183	.....	.....	.....	.....
Birtle " " 4	1,405½	26,153	366½	8,900	43	136	13¼	433	.....	.....
Pelly " " 4	9	55	100	1,293	38	331	.....	.....	.....	.....
Qu'Appelle " " 4	523	12,676	330½	18,173	2	30	4	50	.....	.....
Assiniboine " " 4	215	2,490	25	860	.....	.....	1	25	.....	.....
Crooked Lakes " " 4	472	8,806	134	4,559	3	150	.....	.....	.....	.....
Moose Mountain " " 4	72	998	33	884	14	320	.....	.....	.....	.....
Pine Creek " " 4	.....	.....	2	100	.....	.....	1¼	60	.....	.....
Saddle Lake " " 6	122	1,816	91	3,028	2	106	.....	.....	.....	.....
Hobbema " " 6	328½	3,480	90	2,930	37	473	.....	.....	.....	.....
Battleford " " 6	683½	12,675	390	11,523	25¼	331	.....	.....	.....	.....
Onion Lake " " 6	30	664	43½	1,114	46	747	.....	.....	.....	.....
Duck Lake " " 6	505½	9,040	155½	5,685	105	1,845	.....	.....	.....	.....
Edmonton " " 6	99	1,227	368	3,281	77	765	.....	.....	.....	.....
Carlton " " 6	339¾	4,652	140½	3,536	34½	1,004	.....	.....	.....	.....
Sarcee " " 7	.....	.....	165¼	3,946	.....	.....	.....	.....	.....	.....
Blood " " 7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blackfoot " " 7	.....	.....	178	5,326	.....	.....	4	10	.....	.....
Peigan " " 7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stony " " 7	.....	.....	150	*	.....	.....	.....	.....	.....	.....
Total	4,827¾	84,667	2,901½	80,670	438½	6,427	23½	578	.....	.....

* Used for fodder.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE, SEASON 1901—*Continued.*

Agency.	Grain, Roots and Fodder—*Continued.*									
	Rye.		Buckwheat.		Beans.		Potatoes.		Carrots.	
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Planted.	Bushels Harvested.	Acres Sown.	Bushels Harvested.
Northwest Territories.										
Touchwood Hills Agency, Treaty No. 4							21¼	1,952	3	165
Birtle " " 4							41½	4,429	5¾	63
Pelly " " 4							12⅝	1,318	1	23
Qu'Appelle " " 4							38¾	6,048	1½	121
Assiniboine " " 4							15	1,000	1	25
Crooked Lakes " " 4							17	2 055	....	.....
Moose Mountain " " 4							7¼	569	4	89
Pine Creek " " 1					1¼	80	29	1,900	⅓	40
Saddle Lake " " 6							28¼	4,010	2⅝	223½
Hobbema " " 6							18	1,478	2¾	31
Battleford " " 6							23	3,400	6	600
Onion Lake " " 6							15	2,000	7	69
Duck Lake " " 6							14¾	2,335	1¾	365
Edmonton " " 6							14¾	1,315	4	149
Carlton " " 6							29½	2,750	1	92
Sarcee " " 7							5	700	½	100
Blood " " 7							5	*	...	.....
Blackfoot " " 7							11	820	4	180
Peigan " " 7							18	2,000	2	210
Stony " " 7	60	†					15	580	1	.....
Total.	60				1¼	80	380	40,659	49¼	2,545½

* Not given. † Used for fodder.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Continued.*

AGRICULTURE—*Concluded.*—PROGRESS DURING THE FISCAL YEAR, 1901.

Agency.	Grain, Roots and Fodder—*Concluded.*							New Land Improvements.			Buildings Erected.								
	Turnips.		Other Roots.		Hay.														
	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Acres Sown.	Bushels Harvested.	Other Fodder.	Land Broken.	Land Cropped for first time.	Land Fenced.	Dwellings, Frame.	Dwellings, Log.	Shanties.	Barns.	Horse Stables.	Driving Houses.	Cattle Stables.	Pig Sties.	Storehouses.
NORTHWEST TERRITORIES.						Tons.	Tons.	Acres.	Acres.	Acres.									
Touchwood Hills Agency, Treaty No. 4	8¾	962	1¾	113	....	3,273	208	136	.....	345	...	20	4	...	15	...	28	...	...
Birtle " " 4	5¾	393	..	.....	9	3,397	1,700	258	208	1,538	5	4	....	1	3	8	14	1	8
Pelly " " 4	2	119	1½	.....	...	2,511	319	71	71	110	....	8	1	....	....	....	....	....	....
Qu'Appelle " " 4	16¾	2,352	6½	558	.	3,670	1,720	1,155	482	494	.....	.....	.....	.....	.....	.....	.....	.....	.....
Assiniboine " " 4	3	150	1½	35	...	350	....	225	10	25	...	2	.....	.....	.....	.....	.....	.....	.....
Crooked Lakes " " 4	4	500	...	.....	15	1,755	850	.....	70	.....	....	5	...	.....	.....	.....	.....	.....	.....
Moose Mountain " " 4	9½	424	.	.....	....	950	300	64	14	480	....	25	...	...	.....	.....	21	.....	.....
Pine Creek " " 4	¾	85	¾	50	....	500	.....	2	....	2	....	5	..	.....	.....	.....	7	.....	.....
Saddle Lake " " 6	12½	920	5¾	209½	....	2,598	.....	140	....	.....	....	7	.....	.....	.....	.....	10	....	1
Hobbema " " 6	13¾	452	15¼	8	....	3,850	680	66	31	..	....	7	.....	.....	8	.....	.....	.....	.....
Battleford " " 6	10	750	6	360	....	4,920	510	136	136	298	....	11	.....	.....	.....	.....	.....	6	....
Onion Lake " " 6	*	105	*	40	....	2,500	250	.....	....	38	....	1	.....	.....	.....	.....	1	.....	.....
Duck Lake " " 6	4	553	1¼	348	..	3,763	700	110	110	155	....	9	.....	.....	.....	.....	20	.....	2
Edmonton " " 6	7½	240	2½	51	5	1,837	230	154	77	177	....	9	....	1	5	....	2	....	1
Carlton " " 6	6	667	1½	98	....	2,403	559	94½	90½	101	...	3	16	....	4	....	15	....	....
Sarcee " " 7	3½	580	5	125	30	450	50	20	5	20	1	6	.....	....	4	....	6	....	....
Blood " " 7	.....	.....	.....	.....	....	3,451	.....	.....	...	500	....	6	....	....	...	....	8	...	....
Blackfoot " " 7	6	1,100	1	20	2	1,420	356	69	73	1,687	1	10	....	....	8	....	16	..	....
Peigan " " 7	2	320	2	78	....	500	.....	..	.....	600	4	....	....	....	....	....	....	....	....
Stony " " 7	2	15	.....	..	..	300	50	30	35	9,600	....	7	....	....	2	....	3	...	....
Total	117¼	10,687	51½	2,093½	61	44,398	8,512	2,730½	1,142½	16,170	11	145	21	2	70	8	151	7	12

* Not given.

AGRICULTURAL AND INDUSTRIAL STATISTICS—*Concluded.*

PROGRESS DURING THE FISCAL YEAR 1901—SOURCES AND VALUE OF INCOME.

Agency.	Buildings Erected.		Increase in Value.			Value of Farm Products, including Hay.	Wages Earned.	Received from Land Rentals.	The Estimated Value of Fish and Meat Used for Food is included in these Columns.		Earned by other Industries.	Total Income of Indians.
	Root Houses.	Milk Houses.	Value of Clearing, Cultivating and Fencing.	Value of Buildings.	Increased value of Agricultural Products and Industries.				Earned by Fishing.	Earned by Hunting.		
Northwest Territories.			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Touchwood Hills Agency, Treaty No. 4			1,092 00	3,255 00	4,347 00	10,354 00	1,685 00	.....	175 00	19,760 00	1,992 45	33,966 45
Birtle " " 4	8	.....	1,535 00	2,715 00	4,250 00	29,853 25	15,380 00	.....	1,025 00	4,720 00	3,430 00	54,408 25
Pelly " " 4	.....	.....	575 00	750 00	1,325 00	4,920 40	3,769 50	.....	3,685 00	11,000 00	5,674 77	29,049 67
Qu'Appelle " " 4	.....	.....	11,360 00	320 00	11,680 00	29,895 12	8,320 00	.....	1,582 00	2,199 00	9,000 00	50,996 12
Assiniboine " " 4	.....	.....	600 00	100 00	700 00	4,500 00	2,500 00	.....	.....	1,000 00	2,500 00	10,500 00
Crooked Lakes " " 4	.....	.....	105 00	1,300 00	1,405 00	11,532 08	1,315 00	.....	745 00	145 50	6,482 20	20,219 78
Moose Mountain " " 4	.....	.....	215 00	1,460 00	1,675 00	5,416 73	850 00	480 00	400 00	1,770 00	2,893 64	11,810 37
Pine Creek " " 4	.....	.....	.....	300 00	300 00	1,091 00	1,000 00	.....	400 00	5,700 00	600 00	8,791 00
Saddle Lake " " 6	.....	.....	420 00	1,325 00	1,745 00	14,517 50	1,575 00	.....	680 00	3,705 00	3,314 49	23,791 99
Hobbema " " 6	.....	.....	216 00	900 00	1,116 00	8,837 00	850 00	.....	650 00	450 00	225 00	11,012 00
Battleford " " 6	25	.....	458 00	625 00	1,083 00	27,150 00	2,040 00	.....	350 00	1,775 00	3,400 00	34,715 00
Onion Lake " " 6	.....	.....	100 00	140 00	240 00	12,100 00	1,935 00	.....	2,500 00	18,450 00	4,350 00	39,335 00
Duck Lake " " 6	....	2	755 00	2,030 00	2,785 00	15,705 30	3,358 80	.....	4,100 00	10,910 35	1,540 52	35,614 97
Edmonton " " 6	.....	1	1,830 00	1,193 00	3,023 00	6,781 00	1,350 00	2,500 00	2,850 00	6,500 00	14,700 00	34,681 00
Carlton " " 6	.....	1	391 00	835 00	1,226 00	11,518 20	3,852 50	.....	11,337 00	45,626 88	2,379 25	74,713 83
Sarcee " " 7	.....	.....	300 00	600 00	900 00	5,000 00	2,000 00	.....	.....	500 00	3,000 00	10,500 00
Blood " " 7	.....	.....	300 00	380 00	680 00	18,312 78	5,600 00	1,355 00	.....	500 00	13,345 00	39,112 78
Blackfoot " " 7	.....	.....	1,200 00	340 00	1,540 00	6,436 00	8,000 00	.....	.....	590 00	10,500 00	25,526 00
Peigan " " 7	.....	.....	450 00	1,000 00	1,450 00	2,000 00	2,923 75	.....	40 00	65 00	5,575 64	10,604 39
Stony " " 7	.....	.....	940 00	890 00	1,830 00	1,450 00	3,500 00	.....	200 00	4,000 00	8,586 50	17,736 50
Total	33	4	22,842 00	20,458 00	43,300 00	227,370 36	71,804 55	4,335 00	30,719 00	139,366 73	103,489 46	577,085 10

INDIAN WOMEN WHO HAVE COMMUTED THEIR ANNUITY BY A TEN YEARS' PURCHASE ($50) UNDER SECTION 11 OF THE INDIAN ACT.

Commutations of Annuity, 1901-2.

Treaty No. 1.

St. Peter's Band—Mrs. Jessie Kippling, No. 543.
" " Harriet Favel Smith, No. 96.
" " Mary McLellan, *nee* Bear, No. 576.
" " Matilda Cook, No. 912.
" " Isabella Dobson, No. 45.
" " John Chastellaine, No. 103.
" " Adeline Favel, *nee* Monkman, No. 103.
Brokenhead River Band—Mrs. Maria Dufresne, No. 172.

Treaty No. 2.

Sandy Bay Band—Mary Ann Ward, No. 83.
" Nancy Girardeau, No. 107.
Lake Manitoba Band—Mrs. Abraham Spence, No. 62.
Keesickowenin's Band—Mrs. Walter Scott.
" " J. S. Prout, *nee* Eliza Bone.

Treaty No. 5.

Hollow Water Band—Mrs. Sarah Bercier, No. 11.
Norway House Band—Mrs. Sarah Budd, No. 225.

Treaty No. 6.

Pelican Narrows Band—Mary Linklater, No. 55.
Michel's Band—Mrs. Christine Fifle, No. 81.
" " Isabel Perreau, No. 80.
Enoch's Band—Mrs. Isabel White, No. 83.
Orphans' Band—Mrs. C. Dion, No. 37.
Beaver Lake Band—Labelle Desjarlais, No. 56.
" Caroline M. Okanais, No. 63.
" Flora Powder, No. 22.
" Betsy Gladu, No. 64.
" Ellen Tremblais, No. 61.

SESSIONAL PAPER No. 27

RETURN A (1)—Of Officers and Employees of the Department of Indian Affairs on July 1, 1902.

HEADQUARTERS—INSIDE SERVICE.

Name.	Rank.	Annual Salary.	Date of Present Rank.	Date of First Appointment to Civil Service.
		$		
Hon. Clifford Sifton	Superintendent General		Holds this office combined with that of Minister of the Interior.	
James B. Harkin	Private Secretary	1,700	July 1, 1902	Dec. 2, 1901
James A. Smart	Deputy Superintendent General		Holds this office combined with that of Deputy Minister of the Interior.	
John D. McLean	Chief Clerk and Secretary	2,400	July 1, 1897	Oct. 1, 1876
Samuel Stewart	" Assistant Secretary	1,950	Dec. 30, 1898	July 1, 1879
Duncan C. Scott	" Accountant	2,100	July 6, 1893	Oct. 8, 1880
Reginald Rimmer	" Law Clerk	2,050	June 27, 1898	June 27, 1898
William A. Orr	First Class Clerk, in charge of Land and Timber Branch	1,600	Aug. 1, 1894	Nov. 24, 1883
John McGirr	First Class Clerk	1,800	Oct. 14, 1891	Aug. 1, 1877
Robert G. Dalton	"	1,600	Nov. 29, 1893	Sept. 12, 1871
Samuel Bray, D.L.S.	"	1,550	July 1, 1899	June 14, 1884
Henry C. Ross	Second Class Clerk	1,400	" 1, 1886	Jan. 10, 1883
Edwin Rochester	" "	1,400	June 5, 1890	" —, 1882
James J. Campbell	" "	1,400	Aug. 1, 1894	Dec. 30, 1886
Hiram McKay	" "	1,300	Sept. 11, 1894	July 9, 1880
Martin Benson	" "	1,300	Dec. 1, 1884	April 1, 1876
Henry J. Brook	" "	1,200	July 1, 1898	Jan. 1, 1871
Alfred E. Kemp	" "	1,200	" 1, 1898	Feb. 1, 1884
John D. Sutherland	" "	1,200	Jan. 11, 1899	Jan. 11, 1899
John W. Shore	" "	1,200	July 1, 1899	Mar. 24, 1884
Jno. H. Antliff, M. A. Sc., D.T.S.	" "	1,200	" 1, 1899	July 1, 1898
Joseph Delisle	Junior Second Class Clerk	1,000	" 1, 1900	June 23, 1880
Fannie Yeilding	" " "	1,000	" 1, 1900	April 3, 1882
Caroline Reiffenstein	" " "	1,000	" 1, 1900	Nov. 24, 1883
Lizzie D. McMeekin	" " "	1,000	" 1, 1900	Dec. 31, 1887
Geo. M. Matheson	" " "	1,000	" 1, 1900	June 21, 1888
Edith H. Lyon	" " "	900	" 1, 1900	May 31, 1890
Helen G. Ogilvy	" " "	900	" 1, 1900	June 30, 1890
Floretta K. Maracle	" " "	900	" 1, 1900	Jan. 31, 1891
Robert B. E. Moffat	" " "	900	" 1, 1900	Feb. 7, 1891
Mary D. Maxwell	" " "	900	" 1, 1900	May 31, 1890
Frederick R. Byshe	" " "	900	" 1, 1900	Mar. 26, 1891
Louisa E. Dale	" " "	900	" 1, 1900	July 21, 1891
James Guthrie	" " "	850	" 1, 1900	" 21, 1891
Thos. P. Moffatt	" " "	850	" 1, 1900	Oct. 14, 1891
Alice M. S. Graham	" " "	850	" 1, 1900	Nov. 28, 1893
Frederick H. Byshe	" " "	750	" 1, 1900	Feb. 6, 1893
Emma S. Martin	" " "	700	" 1, 1900	Sept. 11, 1894
Chas. A. Cooke	" " "	700	" 1, 1901	April 1, 1893
Sarah M. O'Grady	" " "	650	" 1, 1901	Oct. 12, 1896
Peter Jos. O'Connor	" " "	650	" 1, 1901	Feb. 15, 1898
Wm. Edwin Allan	" " "	650	" 15, 1901	July 15, 1901
Herbert N. Awrey	" " "	600	Jan. 21, 1902	Jan. 21, 1902
Magaret H. Brennan	Writer	545	Nov. 19, 1896	Nov. 19, 1896
Gertrude A. Gorrell	"	490	May 26, 1899	May 26, 1899
Audrey S. Jones	"	485	Jan. 22, 1900	Jan. 22, 1900
Sarah E. Whitehead	"	460	May 14, 1900	May 14, 1900
Effie K. McLatchie	"	430	July 1, 1901	July 1, 1901
Benjamin Hayter	Packer	590	" 26, 1892	" 26, 1892
William Seale	Messenger	510	Mar. 18, 1893	Mar. 18, 1893
John Ackland	"	390	July 28, 1899	July 28, 1899
David Morin	"	330	" 1, 1901	" 1, 1901

OFFICERS OF OUTSIDE SERVICE AT HEADQUARTERS.

Frederick H. Paget	Attached to Accountant's Branch	1,600	July 1, 1897	June 5, 1885
Jas. Ansdell Macrae	Inspector of Indian Agencies and Reserves	1,800	Oct. 1, 1892	" 14, 1881
Geo. L. Chitty	Inspector of Timber	1,200	June 21, 1893	" 21, 1893

RETURN A (2)—Of Officers and Employees of the Department of Indian Affairs on July 1, 1902.

OUTSIDE SERVICE.

ONTARIO.

Name.	Office.	Annual Salary, &c.	Address.	Bands or Reserves in Agency.
		$ cts.		
Adams, Joshua	Indian Land Agent	Commission of 5 p.c. on collections	Sarnia	Chippewas of Sarnia.
Aylesworth, W. R.	Acting Indian Agent	800 00	Belleville	Mohawks of Bay of Quinté, Tyendinaga reserve.
Blomfield, Charles James	Indian Land Agent	Commission of 7½ p.c. on sales	Lakefield	Islands in River Trent.
Cameron, Edwin D	Indian Supt	1,200 00 —$140 for travelling expenses, and $200 for rent.	Brantford	Six Nations of Grand River.
Ferguson, W. J. C.	Indian Land Agent	—Commission of 5 p.c. on collections	Wiarton	Chippewas and Nawash, Cape Croker.
English, Adam	Indian Agent	500 00	Sarnia	" of Aux Sables, Kettle Point and Sarnia.
Gibson, J. A.	Guardian of Islands	25 00	Mallorytown	Thousand Islands.
Goulette, O. V.	"	150 00	Gananoque	" "
Hagan, Samuel	Indian Agent	500 00 —$24 office rent	Thessalon	Thessalon, Mississagi River and Thessalon Tp.
Hodder, J. F.	"	800 00	Port Arthur	Ojibbewas of Lake Superior.
Hill, David Seymour	Clerk, Indian Office	900 00	Brantford	
Ironside, Alex. McG.	"	720 00	Manitowaning	
Lynch, D. J.	Indian Agent	600 00	Hagersville	Mississaguas of the Credit.
Maclean, William Brown	Indian Supt	900 00 Commission of 5 p.c. on collections; $60 office rent	Parry Sound	Parry Island, Dokis, Henvey Inlet, Nipissing, Shawanaga, Temogaming and Watha (or Gibson).
McDonald, Alex. R.	Indian Agent	500 00	Duart	Moravians of the Thames.
McDougall, W. J.	"	500 00	Wallaceburg	" and Pottawattamies of Walpole Island.
McFarlane, William	"	325 00	Keene	Mississaguas of Mud and Rice Lakes.
McGibbon, Charles	"	500 00	Penetanguishene	Chippewas of Beausoleil, Christian Island,
McIver, John	"	500 00	Cape Croker	" Nawash, Cape Croker.
McPhee, Duncan J.	"	400 00	Atherley	" of Rama.
Nichols, W. L	Acting Indian Agent	825 00 With $154.50 a year for office rent and fuel	Sault Ste. Marie	Batchewana, Big Head or Michipicoten and Garden
Mullen, M.	Indian Agent	60 00	Killaloe	Algonquins of Golden Lake. [River.
Sims, C. L. D.	"	1,000 00	Manitowaning	Sucker Creek, Sheguiandah, South Bay, Maganettawan, Point Grondin, Tahgaiwinini, Whitefish River, Whitefish Lake and unceded portion of Manitoulin Island.
Scoffield, John		500 00	Chippewa Hill	Chippewas of Saugeen.
Sutherland, S.	"	600 00	Delaware	Chippewas, Munsees and Oneidas of the Thames.
Thackeray, John	"	325 00	Roseneath	Mississaguas of Alnwick.

Thorburn, J. H.	"	600 00	Gore Bay	Chippewas of Cockburn Island, Sheshegwaning, Obidgewong and West Bay.
Williams, Albert W.	"	100 00	Port Perry	Mississaguas of Scugog.
Yates, John	"	350 00	Virginia	Chippewas of Snake and Georgina Islands.
Arthur, R. H., M.D.	Medical Officer	600 00—Paid by Bands and appro.		Whitefish Lake, Serpent River and Spanish River Indians.
Baxter, J., M.D.	"	100 00 "		Mississagi River.
Bowman, George, M.D.	"	200 00 "		Chippewas of Beausoleil.
Carruthers, John, M.D.	"	600 00 "		Indians on Manitoulin Island.
Evans, J. W., M.D.	"	100 00—Voted by Parliament.		Indians between Chapleau and Pogamising.
Hough, H. A., M.D.	"	500 00—Paid by Band.		Chippewas of Nawash.
Hay, W. W., M.D.	"	500 00 "		Indians on Walpole Island.
James, M., M.D.	"	200 00—Voted by Parliament.	Mattawa	Algonquin Indians.
Johnston, J., M.D.	"	250 00—Paid by Band		Indians on Manitoulin Island.
Lapp, T. Clarke, M.D.	"	275 00 "		Mississaguas of Alnwick.
McLean, John, M.D.	"	150 00—Paid by Band and appro.		Chippewas of Rama.
McDonald, R., M.D.	"	350 00—Paid by Band.		Mississaguas of the Credit.
McEwen, James M.D.	"	300 00—Voted by Parliament.		Oneidas of the Thames.
McIntosh, J. W., M.D.	"	1,000 00—Paid by Band.		Indians on Manitoulin Island.
McPhail, D. P., M.D.	"	300 00 "		Moravians of the Thames.
Mitchell, F. H., M.D.	"	260 00—Band, $200; $60 vote		Chippewas and Munsees of the Thames.
Moore, John, M.D.	"	250 00—Paid by Band.		Mohawks of the Bay of Quinté.
Passmore, W. J., M.D.	"	250 00 "		" "
Pringle, H. H., M.D.	"	150 00 "		Chippewas of Snake Island.
Proctor, E. L., M.D.	"	37 50 "		Mississaguas of Scugog.
Reid, J. A., M.D.	"	100 00 "		Garden River and Batchewana.
Secord, Levi, M.D.	"	2,850 00 "		Six Nations.
Shaw, J. M., M.D.	"	150 00 "		Mississaguas of Rice Lake.
Williams, R. W., M.D.	"	300 00 "		Chippewas of Saugeen.
Smith, Rev. A. G.	Missionary (C.E.)	500 00 "	Deseronto	Mohawks of the Bay of Quinté.

QUEBEC.

Bastien, Antoine O.	Indian Agent	425 00	Jeune Lorette	Hurons of Lorette; Quarante Arpents and Roemont reserves.
Beaulieu, E.	"	150 00—Commission of 5 p. c.	Cacouna	Amalecites of Cacouna.
Brosseau, Alex.	"	600 00—$60 for office rent	Caughnawaga	Iroquois of Caughnawaga.
Burwash, Adam	"	200 00	N. Temiscaming	Lake Temiscaming.
Comire, A. O., M.D.	"	200 00	St. François du Lac	Abenakis of St. François du Lac.
Desilets, Chas. O. H., M.D.	"	100 00	Becancour	" Becancour.
Gagné, Rev. Jacob	"	100 00	Maria	Micmacs of Maria.
Gagnon, Adolphe	"	400 00	Bersimis	Lower St. Lawrence.
Long, George	"	50 00—Commission of 10 p. c. on land rent and 2½ p. c. on distributions	St. Regis	Iroquois of St. Regis.
McCaffrey, Wm. J.	Indian Agent	600 00	River Desert	River Desert band, Maniwaki reserve.
Marcoux, A.	"	400 00	Pointe Bleue	Montagnais of Lake St. John.

Return A (2)—Of Officers and Employees of the Department of Indian Affairs on July 1, 1902.

Outside Service.

QUEBEC—*Concluded.*

Name.	Office.	Annual Salary, &c.	Address.	Bands or Reserves in Agency.
		$ cts.		
Perillard, Joseph	Indian Agent	200 00	Oka	Lake of Two Mountains.
Pitre, Jeremie	"	200 00	Pointe à la Garde	Micmacs of Restigouche.
Mulligan, E. A., M.D	Medical Officer	200 00—Paid by Band		River Desert band, Maniwaki reserve.
Scott, W. D. B	Indian Agent	400 00	Mingan	Indians of Lower St. Lawrence.
McCartney, F. W., M.D	Medical Officer	80 00 " Quebec Fund		Micmacs of Gaspé.
Constantine, J., M.D	"	500 00	Pointe Blene	Pointe Blene reserve.
Claveau, E. A., M.D	"	200 00	Chicoutimi	Chicoutimi and vicinity.
Simard, A., M.D	"	50 00	St. Urbain	St. Urbain, Charlevoix Co.
De Gonzaque, Rev. Jos	Missionary (R. C.)	235 00	Pierreville	Abenakis of St. Francis.
Giroux, Rev. G	"	225 96	Lorette	Hurons of Lorette.
Bourget, Rev. P	"	125 00—Also $25 for fuel	St. Regis	Iroquois of St. Regis.
Forbes, Rev. G	"	100 00	Caughnawaga	" Caughnawaga.

NEW BRUNSWICK.

Carter, Wm. D	Indian Agent	400 00	Richibucto	Eel River, Restigouche Co.; Bathurst, St. Peter's Island and Pokemouche, Gloucester Co.; Tabusintac, Burnt Church, Eel Ground, Red Bank, Indian Point, Big Hole and Renous, Northumberland Co.; Big Cove, Indian Island and Buctouche, Kent Co.; Shediac and Fort Folly, Westmoreland Co.
Farrell, James	"	500 00—Allowed $50 for office rent	Fredericton	Tobique, Victoria Co.; Edmundston, Madawaska Co.; Kingsclear, St. Mary's, York Co.; Woodstock, Carleton Co.; Oromocto, Sunbury Co.
Sprague, T. F., M.D	Medical Officer	100 00	Woodstock	
Ferguson, A. G., M.D	"	25 00	Dalhousie	Restigouche Co., Eel River reserve.
Benson, J. S., M.D	"	100 00	Chatham	Northumberland Co., Burnt Church reserve.
Desmond, J. F., M.D	"	200 00	Newcastle	" Red Bank and Eel Ground reserves.
McWilliam, L. J., M.D	"	175 00	Rexton	Kent Co., Big Cove and Indian Island reserves.
Landry, D. V., M.D	"	40 00	Buctouche	Buctouche reserve, Kent Co.
McAllister, D. H., M.D	"	200 00	Sussex	King's Co.
Weaver, W. J., M.D	"	100 00	Fredericton	
Duncan, G. M., M.D	"	100 00	Bathurst Village	Gloucester Co., Bathurst reserve.

Ross, J. D., M.D.	"	200 00	Moncton	Westmoreland Co.
Leger, J. A., M.D.	"	200 00	Shediac	"
Bannon, Rev. E. J.	Missionary (R.C.)	100 00	Richibucto	Kent Co., Big Cove reserve.
D'Amour, Rev. L. C.	"	40 00	Edmundston	
Morrisey, Rev. W.	"	100 00	Bartibog Bridge	Northumberland Co., Burnt Church reserve.
O'Keefe, Rev. M. A.	"	100 00	Tobique	
Renous, L.	Constable	24 00	Newcastle	" Eel Ground reserve.
Clare, A.	"	20 00	Rexton	Kent Co., Big Cove reserve.
Swasson, Joseph	"	24 00	Church Point	Northumberland Co., Burnt Church reserve.
Perley, Peter.	Caretaker of Church.	50 00	Tobique	

NOVA SCOTIA.

Beckwith, Chas. E.	Indian Agent	50 00	Steam Mills	Micmacs of King's County.
Cameron, Rev. Angus	"	100 00	Christmas Island	" Cape Breton County.
DeMolitor, John J. E.	"	50 00	Shelburne	" Shelburne County.
Fraser, Rev. John.	"	100 00	St. Peter's	" Richmond Co., Salmon River reserve.
Harlow, Charles	"	100 00	Caledonia	" Lunenburg and Queen's Counties; Bridgewater, New Germany, Chester, Mahone Bay and Lunenburg.
Lacy, John.	"	50 00	Annapolis	" Annapolis County; Maitland and Milford reserves.
Macdonald, Arch. J.	"	100 00	Baddeck	" Victoria County.
McDonald, John R	"	100 00	Heatherton	" Antigonish and Guysborough Counties; Afton, Pomquette Forks and Summerside reserves.
McLeod, Rev. John D.	"	100 00	Eureka	" Pictou County; Indian Cove reserve.
MacPherson, Rev. Donald.	"	100 00	Glendale	" Inverness County; Malagawatch and Whycocomagh reserves.
McManus, Rev. C. E.	"	50 00	Sheet Harbour	" Halifax County.
MacAdam, Rev. D.	"	75 00	Sydney, C. B.	Cape Breton County; Cariboo Marsh, Sydney reserve, and North Sydney.
Purdy, J. H.	"	50 00	Bear River	Micmacs of Digby County; Indian Hill reserve.
Rand, Fred. A., M.D.	"	50 00	Parrsboro'	" Cumberland County; Franklin Manor reserve (Halfway river).
Smith, Thos. B.	"	50 00	Truro	" Colchester County; Millbrook reserve.
Wallace, Alonzo	"	50 00	Shubenacadie	" Hants County; Indian Brook reserve.
Whalen, W. H.	"	50 00	Yarmouth	" Yarmouth County.
Bissett, C. P., M.D.	Medical Officer	125 00	St. Peter's	Richmond County; Salmon River reserve.
Jacques, H., M.D.	"	50 00	Canning	King's County.
Morse, G. R., M.D.	"	50 00	Chester	Lunenburg County, East.
Macaulay, J. A., M.D.	"	75 00		Inverness County, Malagawatch reserve.
MacDonald, Hugh N., M.D.	"	75 00	Whycocomagh	" Whycocomagh reserve.
McDonald, D., M.D.	"	325 00	Baddeck	Victoria County.
McIntyre, D. K., M.D.	"	250 00	Sydney	Cape Breton County.
McDonald, W. H., M.D.	"	150 00	Antigonish	Antigonish County.
McLean, E. D., M.D.	"	150 00	Shubenacadie	Hants County; Indian Brook reserve.

RETURN A (2)—Of Officers and Employees of the Department of Indian Affairs on July 1, 1902.

OUTSIDE SERVICE.

NOVA SCOTIA—*Concluded.*

Name.	Office.	Annual Salary, &c.	Address.	Bands or Reserves in Agency.
		$ cts.		
McMillan, J., M.D.	Medical Officer	75 00	Pictou	Pictou County.
Marsh, H. A., M.D.	"	75 00	Bridgewater	Lunenburg County, West.
Withers, Russell, M.D.	"	50 00	Annapolis	Annapolis County.
Yorston, F. S., M.D.	"	150 00	Truro	Colchester County, Millbrook reserve.
Black, B., M.D.	"	50 00		Hants County.

PRINCE EDWARD ISLAND.

Arsenault, John O.	Indian Superintend't	300 00	Higgins Road	Lennox Island reserve, Richmond bay: Morell reserve, King's County.

BRITISH COLUMBIA.

Vowell, Arthur W.	Indian Supt. and Reserve Com. for B.C.	3,000 00	Victoria	
MacLaughlin, W	Senior Clerk	1,800 00	"	
Stevens, W. A.	Clerk	1,000 00	"	
Dalby, H. G.	"	720 00	"	
McLachlan, D.	Messenger	600 00	"	
Bell, Ewen	Indian Agent	1,200 00	Clinton	Williams Lake agency.
Devlin, Frank	"	1,200 00	New Westminster	Fraser River "
Galbraith, Robert L. T.	"	1,200 00	Fort Steele	Kootenay "
Guillod, Harry	"	1,200 00	Alberni	West Coast "
Irwin, Archibald	"	1,200 00	Savona	Kamloops-Okanagan agency.
Robertson, W. R.	"	1,200 00	Quamichan	Cowichan "
Loring, Richard E.	"	1,200 00	Hazelton	Babine "
DeBeck, G. W.	"	1,200 00	Alert Bay	Kwawkewlth "
Todd, Chas.	"	1,800 00	Metlakahtla	Northwest Coast "
Foot, E. C., M.D.	Medical Officer	300 00	Quamichan	Chemainus "
Rolston, P. W., M.D.	"	400 00	"	Cowichan "
Drysdale, W. F., M.D.	"	500 00	"	Nanaimo "
Large, R. W., M.D.	"	120 00	Bella Bella	Bella Bella "

Bolton, A. E., M.D.	"	240 00	Port Simpson	Port Simpson.
Jones, O. M., M.D.	"	500 00	Victoria	Indians generally.
Millard, H. P., M.D.	"	240 00	Comox	Cowichan agency.
Wilson, T. A., M.D.	"	360 00	Port Essington	Northwest Coast agency.
McLean, Charles, M.D.	"	600 00	Ucluelet	West Coast "
Watt, Hugh, M.D.	"	360 00	Fort Steele	Kootenay "
Wrinch, H., M.D.	"	300 00	Hazelton	Babine "
Sanson, G., M.D.	"	480 00	Lillooet	Williams Lake "
Morgan, A. D., M.D.	"	300 00	Quesnel	" "
Keller, H. L. A., M.D.	"	300 00	Kilowna	Kamloops "
Williams, G., M.D.	"	300 00	Vernon	" "
White, R. B., M.D.	"	480 00	Fairview	" "

MANITOBA, KEEWATIN AND NORTHWEST TERRITORIES.

	INDIAN COMMISSIONER'S OFFICE.			
Laird, Hon. David	Indian Commissioner	3,200 00	Winnipeg, Man.	
McKenna, J. A. J.	Asst. Indian Comm'r. and Chief Inspect.	2,400 00	"	
Lash, J. B.	Secy. to Commiss'r.	1,700 00	"	
Ponton, Arch. W.	Surveyor in charge of Indian reserve surveys in N. W. T., Manitoba, Keewatin and part of Ontario.	1,800 00	"	
Reid, J. L., Sr.	Asst. Surveyor	1,400 00	"	
Betournay, Geo. A., M.A.	Clerk	1,200 00	"	
Jean, G. E	"	1,090 00	"	
Robson, M	Stenographer and Typewriter	600 00	Winnipeg, Man.	
Gordon, M.	Typewriter	480 00	"	
Palk, L.	Clerk	360 00	"	
Fewtrell, E. L.	Caretaker	144 00	"	
	TREATY NO 8.			
Conroy, H. A.	Inspector	1,800 00		
Richardson, H.	Clerk	900 00		

RETURN A (2)—Of Officers and Employees of the Department of Indian Affairs on July 1, 1902.

OUTSIDE SERVICE.

MANITOBA, KEEWATIN AND NORTHWEST TERRITORIES—*Continued.*

Name.	Office.	Annual Salary, &c.	Address.	Bands or Reserves in Agency.
	MANITOBA SUPERINTENDENCY.	$ cts.		
McColl, Ebenezer	Inspector of Indian Agencies and Reserves	2,400 00	Winnipeg, Man	Clandeboye and Berens River agencies.
Leveque, L. J. A.	Inspector of Indian Agencies and Reserves	1,800 00	Rat Portage, Ont.	Rat Portage, Couchiching and Savanne agencies
Marlatt, Samuel R.	Inspector of Indian Agencies and Reserves	1,800 00	Portage la Prairie, Man	Portage la Prairie, Manitowapah and the Pas.
Slater, G.	Interpreter	360 00	" "	" " "
Campbell, M.	Farmer	400 00	Swan Lake, Man.	" " "
Ginn, J. C.	"	200 00	Dominion City, Man.	" " "
Hossuck, D.	Constable	800 00	Winnipeg	Clandeboye, Berens River, Rat Portage.
	TREATY NO. 2.			
Swinford, S.	Indian Agent	1,200 00	Portage la Prairie, Man	Manitowapah Agency: Sandy Bay, Lake Manitoba; Ebb and Flow Lake, Fairford, Sandy Bay (Treaty No. 2), Lake St. Martin, Crane River, Waterhen River and Pine Creek reserves.
Tucker, Geo.	Farmer	20 00	Indian Ford, Man.	
	TREATY NO. 3.			
Wright, J. P.	Indian Agent	1,200 00	Fort Frances, Ont.	Couchiching Agency: Hungry Hall, Long Sault, Manitou, Little Forks, Couchiching, Stangecoming, Niacatchewenin, Nickickconsemenecanning, Seine River and Lac la Croix.
	TREATY NO. 5.			
Courtney, Joseph	Indian Agent	1,000 00	The Pas, Sask	The Pas Agency: Grand Rapids (Saskatchewan River), Chemawawin, Moose Lake, The Pas, Pas Mountain, Cumberland.

Semmens, Rev. John	"	1,000 00	Berens River, Man.	Berens River Agency: Black River, Hollow-water River, Loon Strait, Blood Vein River, Fisher River, Jackhead River, Berens River, Pekangekum, Grand Rapids (Berens River), Poplar River, Norway House, Cross Lake.
	NORTHWEST SUPERINTENDENCY.			
McGibbon, Alex	Inspector of Indian Agencies and Reserves	2,200 00	Qu'Appelle	Birtle, Swan River, Moose Mountain, Crooked Lake, Assiniboine, File Hills, Muscowpetung and Touchwood agencies.
Chisholm, Wm. J	Inspector of Indian Agencies and Reserves	1,800 00	Battleford	Duck Lake, Carlton, Battleford, Onion Lake, Saddle Lake agencies, and White Cap Sioux, Montreal Lake and Lac la Ronge reserves.
Villebrun, I	Teamster and Interpreter	360 00		
	TREATY NO. 4.			
	Birtle Agency.			
Wheatley, G. H	Indian Agent	1,200 00	Birtle, Man	Birdtail, Oak River, Oak Lake, Turtle Mountain, Keeseekoowenin, Waywayseecappo, Valley River, Gambler's and Rolling River.
Dickenson, S. M	Clerk	800 00	"	
Black, John	Interpreter	300 00	"	
Yeomans, E. H	Farmer	600 00	"	
	Pelly Agency.			
McKenzie, R. S	Indian Agent	1,000 00	Côté, Assa	Côté, Key's and Keeseekouse reserves.
Fisher, F	Interpreter & Clerk	600 00	"	
Hunt, Jas	Labourer	300 00	"	
	Moose Mountain Agency.			
Murison, W	Farmer in charge	600 00	Canni'gton Manor, Assa	Pheasant Rump's, Striped Blanket's and White Bear's reserves.
	Crooked Lake Agency.			
Begg, Magnus	Indian Agent	1,100 00	Broadview, Assa	Ochapowace's, Kakewistahaw's, Cowessess and Sakimay's reserves.
Jowett, John W	Clerk	600 00	"	
Sutherland, J. A	Miller and Blacksmith	600 00	"	
Pollock, Isaac	Farmer	480 00	"	
Hourie, Peter	"	480 00	"	
Cameron, Henry	Interpreter	300 00	"	

RETURN A (2)—Of Officers and Employees of the Department of Indian Affairs on July 1, 1902.

OUTSIDE SERVICE.

MANITOBA, KEEWATIN AND NORTHWEST TERRITORIES—*Continued.*

NORTHWEST SUPERINTENDENCY—*Continued.*

Name.	Office.	Annual Salary, &c.	Address.	Bands or Reserves in Agency.
	Qu'Appelle Agency.	$ cts.		
Graham, Wm. M.	Indian Agent	1,200 00	Qu'Appelle	Little Black Bear's, Star Blanket's, Okanase, Peepeekeesis', Piapot's, Muscowpetung's, Pasquah's and Standing Buffalo's reserves.
Ashdown, L.	Clerk	600 00	"	
Ward, Mark	Interpreter	300 00	"	
Desnomme, Jos.	Herder	360 00	"	
Hockley, S.	Farmer	600 00	"	
Grant, D. J.	"	480 00	"	
Finlayson, J. D.	Herder	480 00	"	
Mills, A. H.	Farmer	480 00	"	
Hawes, Jas.	"	480 00	"	
	Touchwood Hills Agency.			
Martineau, H.	Indian Agent	1,200 00	Kutawa, Assa.	Muscowequan's, George Gordon's, Day Star's, Poor Man's, Fishing Lake and Nut Lake reserves.
Gooderham, J. H.	Clerk	660 00	"	
Stanley, E.	Farmer	480 00	"	
Pratt, Jos.	"	360 00	"	
Hamilton, P. J.	"	480 00	"	
McNabb, G.	Interpreter	300 00	"	
Beatty, R.	Overseer	180 00	Melford, Sask.	Kinistino band.
Harrison, J. W.	Farmer	480 00		
	Assiniboine Agency.			
Aspdin, Thos. W.	Farmer in charge	800 00	Sintaluta, Assa.	Assiniboine reserve.
Kennedy, Daniel	Labourer	300 00	"	
Indian	Teamster	120 00		
	Duck Lake Agency.			
Jones, W. E.	Indian Agent	1,000 00	Duck Lake, Sask.	One Arrow, Okemassis, Beardy's, Checastapasin's, John Smith's, James Smith's and Cumberland reserves.
Price, Jos. H.	Farmer	480 00	"	
Marion, Louis	"	480 00	"	

Letellier, J. S.	"	480 00	"	
Turcotte, N.	Interpreter	360 00	"	
McKay, A. J.	Farmer	480 00	"	
	Carlton Agency.			
Macarthur, Jas.	Indian Agent.	1,000 00	Mistawasis, Sask.	Wm. Twatt's, Petequakey's, Mistawasis, Ahtakakakoops, Kapahawekenum's, Keeneenostayo's, Pelican Lake and Wahspaton Sioux reserves.
Jackson, T. E.	Clerk	600 00	"	
McKenzie, John	Miller	600 00	"	
McBeath, Wm.	Farmer	480 00	"	
Anderson, P.	"	480 00	"	
Tucker, W. R.	Overseer	240 00	Saskatoon	White Cap Sioux reserve.
Garnot, P.	"	180 00	Montreal Lake	Montreal Lake and Lac la Ronge reserve.
Pratt, Rupert	Interpreter	360 00	Mistawasis, Sask.	
Dreaver, J., sr.	Farmer	480 00	"	Big River reserve.
	Battleford Agency.			
Day, J. P. G.	Indian Agent	1,000 00	Battleford, Sask	Red Pheasant's, Stony, Sweet Grass, Poundmaker's, Little Pine's, Moosomin's and Thunderchild's reserves.
Johnson, C. J.	Clerk	600 00	"	
Nolan, A.	Farmer	480 00	"	
Simpson, S. S.	"	480 00	"	
L'Heureux, M.	"	480 00	"	
Jefferson, R.	"	480 00	"	
Desjardin, S.	T'mster& Interpreter	360 00	"	
Fiddler, Geo.	Blacksmith	300 00		
	Onion Lake Agency.			
Sibbald, W.	Indian Agent	900 00	Onion Lake, Sask.	Seekaskootch and Chipewyan No. 124, reserves.
Lovell, L.	Farmer & Miller	600 00	"	
Taylor, Joseph	Interpreter	240 00	"	
Slater, Thos.	Stockman	420 00	"	
	Saddle Lake Agency.			
Mann, G. G.	Indian Agent	1,000 00	Saddle Lake, Alta.	Saddle Lake, Wahsatanow, Whitefish Lake, Lac la Biche, Chipewyan No. 130 and Beaver Lake reserves.
Tompkins, P.	Farmer	480 00	"	
Batty, J.	"	480 00	"	
Whitford, S.	Interpreter	300 00	"	
Mann, B. E.	Clerk	180 00	"	
	Edmonton Agency.			
Gibbons, James	Indian Agent	1,000 00	Edmonton, Alta.	Enoch's, Alexander's, Joseph's, White Whale Lake and Paul's reserves.
Carruthers, H. A.	Clerk	690 00	"	
Bard, D.	Farmer	480 00	"	
Foley, John	Interpreter	360 00	"	
Blewett, W. G.	Farmer	420 00	"	
Pattison, A. E.	"	480 00	"	

RETURN A (2)—Of Officers and Employees of the Department of Indian Affairs on July 1, 1902.

OUTSIDE SERVICE.

MANITOBA, KEEWATIN AND NORTHWEST TERRITORIES—*Concluded.*

NORTHWEST SUPERINTENDENCY—*Concluded.*

Name.	Office.	Annual Salary, &c.	Address.	Bands or Reserves in Agency.
	Hobbema Agency.	$ cts.		
Grant, Wm. S	Indian Agent	1,000 00	Hollbroke, Alta	Samson's, Ermineskin's and Louis Bull's bands.
Hollies, J.	Clerk	600 00	"	
Chandler, E. E	Farmer	480 00	"	
Whitford, Gilbert	"	480 00	"	
Blanc, H	T'nster & Interpreter	360 00	"	
Indian	Miller	120 00	"	
"	Mail Carrier	60 00	"	
	Sarcee Agency.			
McNeil, Alex. J	Indian Agent	1,000 00	Calgary, Alta	Sarcee reserve.
Hodgson, George	Interpreter	480 00	"	
Indian	Scout	120 00	"	
Godin, Tom	Assistant Issuer	60 00	"	
	Stony Agency.			
Sibbald, H. E	Farmer in charge	720 00	Morley, Alta	Stony reserve.
Nicol, H	Clerk	480 00	"	
William, Jos	Herder	240 00	"	
Mason, P	"	180 00	"	
	Blackfoot Agency.			
Markle, J. A	Indian Agent	1,400 00	Gleichen, Alta	Blackfoot Indians.
James, W. H	Clerk and Issuer	600 00	"	
Cosgrave, W. S	Farmer	500 00	"	
Jones, A. E	"	540 00	"	
McMaster, D	Interpreter	480 00	"	
	Blood Agency.			
Wilson, James	Indian Agent	1,400 00	Macleod, Alta	Blood Indians.

Fleetham, T. J.	Clerk	660 00	"	
McDonald, R. C.	Farmer	480 00	"	
Damon, W.	"	480 00	"	
Webb, J. A.	"	480 00	"	
Rhodes, F	Issuer	540 00	"	
English, John	Interpreter	300 00	"	
Indian	Scout	120 00	"	
"	"	120 00	"	
Sister St. Eusèbe	Hospital Matron	180 00	"	
" Brannigan	" Nurse	120 00	"	
" Girard	" "	120 00	"	
	Peigan Agency.			
Wilson, R. N.	Indian Agent	1,000 00	Macleod, Alta	Peigan Indians.
Race, G. H	Clerk and Issuer	660 00	"	
Clarke, O. H	Stockman	480 00	"	
Scott, Thomas	Interpreter	300 00	"	
Indian	Scout	120 00	"	
	Medical Officers.			
Hanson, Thos., M.D	Medical Officer	700 00	Rat Portage, Ont	Rat Portage agency.
Moore, Robert, M.D	"	450 00	Fort Frances, Ont	Couchiching "
Steep, J. R., M.D	"	800 00	Winnipeg, Man	Clandeboye agency; Rupert's Land and St. Boniface industrial schools.
Donovon, H. J., M.D	"	480 00	Red Deer, Alta	Red Deer industrial school.
Edwards, O. C., M.D	"	1,800 00	Macleod, Alta	Blood and Peigan reserves.
Fraser, M. S., M.D	"	480 00	Brandon, Man	Brandon industrial school.
Goodwin, R., M.D	"	200 00	Elkhorn, Man	Elkhorn industrial school.
Lafferty, J. D., M.D	"	1,800 00	Calgary, Alta	Blackfoot, Sarcee and Stony agencies, and High River and Calgary industrial schools.
Macadam, S. T., M.D	"	900 00	Battleford, Sask	Battleford agency and industrial school.
Seymour, M. M., M.D	"	600 00	Fort Qu'Appelle	Qu'Appelle industrial school.
Bird, James R., M.D	"	600 00	Whitewood, Assa	Crooked Lake agency.
Carthew, E. C., M.D	"	900 00	Qu'Appelle "	File Hills and Touchwood Hills reserves.
Matheson, E., M.D	"	300 00	Onion Lake, Sask	Onion Lake agency.
Kitchen, E. C., M.D	"	150 00	Prince Albert, Sask	Emmanuel College.
Graham, J. A., M.D	"	500 00	Regina, Assa	Regina industrial school.
Kalbfleisch, W. H., M.D	"	600 00	Balgonie "	Piapot's, Pasquah's and Muscowpetung's reserves.
Bonjou, Victor, M.D	"	300 00	Sintaluta "	Assiniboine agency.
Reid, J. L., M.D	"	600 00	Prince Albert, Sask	John and James Smith's reserves.
Tyerman, P. D., M.D	"	900 00	" "	Carlton agency.
Harrison, J. D., M.D	"	750 00	Edmonton, Alta	Edmonton agency.
Hardy, John G., M.D	"	300 00	Carlyle, Assa	Moose Mountain agency.
Bourgeault, V., M.D	"	500 00	Duck Lake, Sask	Boarding school and reserves.
Larose, A., M.D	"	900 00	The Pas, Sask	Pas agency reserves.
Tierney, J. A., M.D	"	150 00	St. Albert, Alta	St. Albert boarding school.

RETURN B (1)—INDIANS OF NOVA SCOTIA.

Service.	Grant.	Expenditure.	Grant not used.	Grant exceeded.
	$ cts.	$ cts.	$ cts.	$ cts.
Salaries	1,150 00	1,150 00		
Relief and seed grain	2,700 00	2,699 66	0 34	
Medical attendance and medicines	3,700 00	3,696 16	3 84	
Repairs to roads	200 00	200 00		
Miscellaneous	100 00	101 29		1 29
	7,850 00	7,847 11	4 18	1 29

RETURN B (2)—INDIANS OF NEW BRUNSWICK.

Salaries	1,184 00	1,184 00		
Relief and seed grain	3,300 00	3,298 23	1 77	
Medical attendance and medicines	3,540 00	3,544 33		4 33
Miscellaneous	500 00	453 84	46 16	
	8,524 00	8,480 40	47 93	4 33

RETURN B (3)—INDIANS OF PRINCE EDWARD ISLAND.

Salaries	300 00	300 00		
Relief and seed grain	925 00	859 03	65 97	
Medical attendance and medicines	350 00	345 43	4 57	
Miscellaneous	75 00	2 19	72 81	
	1,650 00	1,506 65	143 35	

RETURN B (4)—INDIANS OF MANITOBA AND NORTHWEST TERRITORIES.

Annuities and commutations	147,938 00	146,630 00	1,308 00	
Implements, tools and harness	10,192 00	10,220 27		28 27
Field and garden seeds	2,877 00	2,721 15	155 85	
Live stock	20,344 00	20,346 48		2 48
Supplies for destitute and working Indians	188,867 00	188,325 02	541 98	
Triennial clothing	3,473 00	2,711 46	761 54	
Day, boarding and industrial schools	296,971 00	282,927 44	14,043 56	
Surveys	7,500 00	7,499 96	0 04	
Sioux	6,728 70	6,024 67	704 03	
Grist and saw mills	1,113 00	1,112 67	0 33	
General expenses	153,783 50	153,924 88		141 38
	839,787 20	822,444 00	17,515 33	172 13

RETURN B (5)—INDIANS OF THE YUKON DISTRICT.

Destitute Indians	1,000 00	1,264 11		264 11
Schools	5,000 00		5,000 00	
	6,000 00	1,264 11	5,000 00	264 11

RETURN B (6)—INDIANS OF BRITISH COLUMBIA.

Service.	Grant.	Expenditure.	Grant not used.	Grant exceeded.
	$ cts	$ cts.	$ cts.	$ cts.
Salaries	20,560 00	19,919 99	640 01	
Relief of destitute	6,500 00	6,499 38	0 62	
Seed, implements and tools	1,000 00	510 50	489 50	
Medical attendance and medicines	20,500 00	20,468 43	31 57	
Day schools	8,600 00	8,005 41	594 59	
Industrial and boarding schools	69,050 00	55,200 58	13,849 42	
Surveys and reserve commission	7,000 00	3,825 20	3,174 80	
Travelling expenses	5,600 00	5,269 55	330 45	
Miscellaneous and office—including hospitals, irrigation, dyking, and suppression of the liquor traffic	10,920 00	9,809 86	1,110 14	
	149,730 00	129,508 90	20,221 10	

RETURN B (7)—INDIANS OF ONTARIO AND QUEBEC.

Relief, seed, medical attendance, Quebec	6,400 00	5,903 70	496 30	
Relief, seed, medical attendance, Ontario	2,100 00	2,094 36	5 64	
Blankets and clothing, Ontario and Quebec	500 00	457 65	42 35	
Schools, Ontario, Quebec and Maritime Provinces	42,190 00	40,508 29	1,681 71	
Salaries of Chiefs, Cape Croker and Gibson and Agent at St. Regis	150 00	150 00		
Removal of Lake of Two Mountains Indians, Oka to Gibson	200 00		200 00	
Robinson Treaty annuities	16,806 00	16,296 09	509 91	
Survey of Indian reserves	500 00	88 00	412 00	
Indian Land Management Fund	14,000 00	14,000 00		
Grant to Agricultural Society—Munsees of the Thames	90 00	90 00		
To assist in suppression of liquor traffic	500 00	507 00		7 00
For the erection of lock-up at St. Regis	500 00		500 00	
Repairs to mission-house, Caughnawaga	1,700 00	1,700 00		
	85,636 00	81,795 09	3,847 91	7 00

RETURN B (8)—GENERAL.

Salary of Inspector of Agencies	1,800 00	1,800 00		
Salary of Inspector of Timber	1,200 00	1,200 00		
Travelling expenses and clerical assistance for these officers	1,700 00	1,284 29	415 71	
	4,700 00	4,284 29	415 71	

INDIAN TRUST FUND.

RETURN C showing transactions in connection with the Fund during the year ended June 30, 1902.

Service.	Debit.	Credit.
	$ cts.	$ cts.
Balance, June 30, 1901		3,941,393 77
Collections on land sales; timber and stone dues; rents, fines and fees		187,302 00
Interest for year ended June 30, 1902, on above balance		163,244 78
Legislative grants to supplement the Funds		30,746 09
Outstanding cheques for 1899-1900		8 37
Expenditure during the year 1901-1902	276,749 15	
Balance, June 30, 1902	4,045,945 86	
	4,322,695 01	4,322,695 01

For full details of the above expenditure from the Indian Trust Fund and the Consolidated Fund, see Part J—1, of the Auditor General's Report.

DOMINION OF CANADA

SCHEDULE OF INDIAN RESERVES

IN THE DOMINION

SUPPLEMENT TO ANNUAL REPORT

OF THE

DEPARTMENT OF INDIAN AFFAIRS

FOR THE

YEAR ENDED JUNE 30

1902

OTTAWA
PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1902

[No. 27a—1903]

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SCHEDULE OF INDIAN RESERVES

IN THE DOMINION

SCHEDULE OF INDIAN RESERVES IN THE DOMINION

NOVA SCOTIA.

No.	Name.	Where Situated.	Tribe or band.	Area, Acres.	Remarks.
		Victoria County.			
	Middle River	At the mouth of the Waganatchook or Middle River.	Micmac	650·00	Transferred to the Dominion by the Provincial Government at Confederation.
		Inverness County.			
2	Whycocomagh	On the north shore and near the head of Whycocomagh basin.	"	1,555·00	" " "
4	Malagawatch	At the entrance of the St. Denis river basin.	"	1,200·00	" " "
25	Marguerite River	At the mouth of the Marguerite river	"	2·00	" " "
26	Port Hood	Near Port Hood	"	Not surveyed.	" " "
		Cape Breton County.			
3	Escasoni	In St. Andrew's township, on the north side of St. Andrew's channel.	"	2,800·00	" " "
28	Sydney	In Sydney harbour, one mile from Sydney.	"	2·73	Granted to the Dominion for the purposes of an Indian reserve by the province, April 28, 1882.
29	Cariboo Marsh	On the Movia road, five miles from Sydney	"	536·00	" " "
		Richmond County.			
5	Chapel Island	On the north shore of Great Bras d'Or lake	"	1,281·00	Transferred to the Dominion by the Provincial Government at Confederation.
		Digby County.			
6	Bear River	On the Bear river, partly in Digby and partly in Annapolis counties.	"	1,600·00	" " "
		Annapolis County.			
7	Cegumcega Lake (north of boundary).	On the boundary between Annapolis and Queen's counties.	"	100·00	" " "
8	New Liverpool Road.	On the New Liverpool road, about seven miles from Annapolis.	"	572·00	Transferred to the Dominion by the Provincial Government at Confederation. Surveyed in August, 1891.
		Queen's County.			
9	Cegumcega Lake (south of boundary).	On the boundary between Queen's and Annapolis counties.	"	615·00	Transferred to the Dominion by the Provincial Government at Confederation.

10	Ponhook Lake	At the outlet of Ponhook lake	Micmac	200·00	"	"	"
11½	Port Medway River	On the Port Medway river, one-quarter of a mile from Port Medway lake.	"	10·00	"	"	"
12	Wild Cat	Near the mouth of Wild Cat creek, between Malaga lake and Port Medway river.	"	1,150·00	"	"	"
		Halifax County.					
13	Grand Lake	On the west shore of Grand lake, near the boundary between Halifax and Hants counties.	"	1,600·00	Transferred to the Dominion by the Provincial Government at Confederation. Surveyed in March, 1887.		
15	Sambro	Between Sambro basin and Long cove, Sambro harbour.	"	306·00	Transferred to the Dominion by the Provincial Government at Confederation.		
16	Ingram's River	At the mouth of Ingram's river, St. Margaret's bay.	"	325·00	"	"	"
17	Beaver Lake	At Beaver lake, on the road from Sheet Harbour to Musquodoboit.	"	100·00	"	"	"
18	Ship Harbour Lake	On the northeastern shore of Ship Harbour lake.	"	500·00	"	"	"
30	Minister's Lake (Cow Bay or Coal Harbour)	At Minister's lake, on the Caldwell road between Coal Harbour and the Eastern Passage.	"	43·75	Purchased by the Department of Indian Affairs, Aug. 20, 1880.		
		Hants County.					
14	Indian Brook or Shubenacadie.	On Indian brook, in the township of Douglas.	"	1,790·00	Transferred to the Dominion by the Provincial Government at Confederation.		
		Lunenburg County.					
19	Pennall's Reserve	Near New Ross, at the west end of Wallaback lake.	"	100·00	"	"	"
19A	New Germany	At Lake Peter, on the eastern branch of the Lahave river.	"	953·00	Transferred to the Dominion by the Provincial Government at Confederation. Surveyed and subdivided in 1880.		
20	New Ross	At Nine Mile lake, about seven miles north of New Ross.	"	1,000·00	Transferred to the Dominion by the Provincial Government at Confederation.		
21	Gold River	In two portions, containing 960 and 81 acres respectively, situated near the head of Malone bay, Chester basin.	"	1,041·00	"	"	"
		Pictou County.					
24	Fisher's Grant Reserves.	At the head of Moodie cove, on the south side of the entrance to Pictou harbour.	"	50·00	"	"	"
24A		At Boat Harbour	"	73·00	Purchased by the Dominion Government December 7, 1874. The reserve then contained 89 acres. On June 28, 1876, 16 acres were cut off and given in exchange for 24B.		

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

NOVA SCOTIA—*Concluded.*

No.	Name.	Where Situated.	Tribe or band.	Area. Acres.	Remarks.
24 B		Lies between and adjoining 24 and 24A.. .	Micmac	11 00	The lot referred to above, received in exchange for 16 acres cut off 24A.
24 C		East of and adjoining 24A.....	"	30·00	Purchased by the Department of Indian Affairs December 1, 1888.
31	Chapel Island (A)	In Merigomish harbour. Island A contains approximately 30 acres and Island B 5 acres.	"	Not surveyed.	Reserved for the use of the Indians prior to Confederation, with the understanding that they may be resumed again if required by Her Majesty's Government. (File 25421.)
31 A	Mooley's Island (B).....				
		Cumberland County.			
22	Franklin Manor	Adjoins the Franklin Manor, about five miles southwest of Amherst.	"	1,000 00	Transferred to the Dominion by the Provincial Government at Confederation.
		Antigonish County.			
23	Ponquet and Afton Reserves	Near Ponquet harbour...	"	525·00	" " "
		Colchester County.			
27	Millbrook	On the east side of the Intercolonial railway, at an arch culvert over the Mill brook, in the township of Truro.	"	35 00	Purchased by the Department of Indian Affairs, December 6, 1886. (File 25421.)
		King's County.			
32	Cambridge or Cornwallis..	Situated at Cambridge, in the township of Cornwallis.	"	9·99	Purchased by the Department of Indian Affairs, February 19, 1880.
		Yarmouth County.			
33	Yarmouth..	On the eastern side of Starr's road, near the town of Yarmouth.	"	21·19	Purchased by the Department of Indian Affairs, November 5, 1887.

PRINCE EDWARD ISLAND.

1	Lennox Island	At the northwest extremity of Richmond or Malpeque bay.	Micmac	1,320	Transferred to the Dominion Government at Confederation.

2	Morell	On the Morell river, in township No. 39	"	204	Granted about the year 1846 by a private owner to certain eight Indian families. Subsequently, April 7, 1859, the tract was conveyed by the Provincial Government to the then Indian Commissioners and their successors in office in trust for the Indians. (File 4,217.)

NEW BRUNSWICK

Northumberland.

1	Indian Point	In the parish of Northesk, on the left bank of the northwest Miramichi river, and nearly opposite the mouth of the Little Miramichi river.	Micmac, Red Bank band.	100	Transferred to the Dominion Government at Confederation. The reserve originally contained about 750 acres; of this area 650 acres were subdivided and sold prior to Confederation.
2	Eel Ground	In the parish of Northesk, on the left bank of the northwest Miramichi river, and near its confluence with the main southwest Miramichi river.	Micmac, Eel Ground band.	2,682	Transferred to the Dominion Government at Confederation.
4	Red Bank	In the parish of Southesk, on the right bank on the Little southwest Miramichi river and at its confluence with the northwest Miramichi river.	Micmac, Red Bank band.	3,797	Transferred to the Dominion Government at Confederation. The reserve originally contained about 6,100 acres. Two portions are reserved for the use of the Indians containing 3,330 and 467 acres respectively. The remainder has been subdivided and is being sold for the benefit of the Indians. (File 107,222 No. 2.)
7	No name (Part of the Red Bank reserve)	On the left bank of the Little southwest Miramichi river opposite No. 4.	" "	2,353	Transferred to the Dominion Government at Confederation. The reserve originally contained about 5,000 acres. Two portions are reserved for the use of the Indians containing 2,288 and 65 acres respectively. The remainder has been subdivided and is being sold for the benefit of the Indians.
8	Big Hole Track	In the parish of Northesk, on the left bank of the northwest Miramichi river, opposite the mouths of the Big and Little Sevogle rivers.	Micmac. The north half belongs to the Red Bank band; the south half to the Eel Ground band.	6,303	Transferred to the Dominion Government at Confederation. The reserve originally contained 6,800 acres. Five lots containing together 497 acres were sold prior to Confederation.
9	Tabusintac	In the parish of Alnwick, on both sides of the Tabusintac river and about five miles from its mouth.	Micmac	8,077	Transferred to the Dominion Government at Confederation. About one-half the reserve was subdivided, and eight lots containing together 1,169 acres were sold prior to Confederation. (File 107, 222, No. 7.)
12	Renous	On the right bank of the southwest Miramichi river, about half a mile above the mouth of the Renous river.	Micmac, Eel Ground band.	100	Transferred to the Dominion Government at Confederation.
14	Burnt Church	At the mouth of Burnt Church river, on the northwest shore of Miramichi bay.	Micmac	2,058	Transferred to the Dominion Government at Confederation.

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

NEW BRUNSWICK—*Continued.*

No.	Name.	Where Situated.	Tribe or band.	Area, Acres.	Remarks.
		Restigouche.			
3	Eel River	In the parish of Dalhousie, at the mouth of the Eel river and on its left bank.	Micmac	220	Transferred to the Dominion Government at Confederation.
		York.			
6	Indian Village (Kingsclear)	In the parish of Kingsclear, on the right bank of the River St. John.	"	460	Transferred to the Dominion Government at Confederation.
22	St. Croix	In the parish of Dumfries, on the east bank of the First Chiputneticook lake and near the mouth of the Little Digdeguash river.	Analecite	200	Set apart and vested in the Department of Indian Affairs by Order in Council of the province of New Brunswick dated December 12, 1881. (File 4,252.)
24	St. Mary's	In the parish of St. Mary's directly opposite the city of Fredericton.	"	2½	Purchased by the Dominion Government, June 20, 1867. Nos. 175 and 206 Book of Surrenders.
		Madawaska.			
10	St. Basil Edmundston	On the left bank of the River St. John, near the mouth of the Madawaska river.	"	722	Transferred to the Dominion Government at Confederation.
		Victoria.			
20	Tobique	In the parish of Perth, on the left bank of the River St. John, at the mouth of the Tobique river.	"	5,766	Transferred to the Dominion Government at Confederation. The reserve originally contained 18,500 acres approximately. The land reserved for the use of the Indians consists of a small tract containing 81 acres situated at the mouth of the Tobique river, on its south bank and nearly the whole of the land lying north of the same river. The remainder of the reserve has been subdivided and is being sold for the benefit of the Indians.
		Gloucester.			
11	Pabineau	In the parish of Bathurst, at the mouth of the Pabineau river, on the left bank of the Nepisiguit river.	Micmac	1,000	Transferred to the Dominion Government at Confederation.
25	Indian Island	In Nepisiguit bay opposite the town of Bathurst.	Micmacs of Bathurst	16	Purchased by the Dominion Government, Nov. 26, 1895. No. 371. (File 132,215.)
13	Pocksnouche	In the parish of Inkerman, on the right bank of the Pocksnouche river, about seven miles from its mouth.	Micmac	2,477	Transferred to the Dominion Government at Confederation.

		Kent.			
15	Richibucto	On the left bank of the Richibucto river, about eight miles from its mouth.	Micmacs, Big Cove band.	2,202¾	Transferred to the Dominion Government at Confederation. The reserve originally contained about 5,720 acres. Two-thirds of it was subdivided and a number of lots sold prior Confederation. (F. 13,145.)
16	Buctouche	On the left bank of the Buctouche river, about three miles from its mouth.	Micmac		Transferred to the Dominion Government at Confederation.
27	Indian Island reserve	A point on the mainland at the mouth of Gaspereau creek, opposite Richibucto island in Richibucto harbour.	"		A 'Special Reserve,' held by deed from J. C. Vanlour to the Roman Catholic Bishop of St. John for the use of the Indians. (File 132,215.)
		Westmoreland.			
27	Fort Folly	On the left bank of the Petitcodiac river, due west of the town of Dorchester.	"	62½	Purchased by the Provincial Government and deeded to and held in trust by the Magistrates of the county of Westmoreland for the use of the Micmac Indians, Aug. 15, 1840. (File 61,747.)
		King's.			
18	The Brothers	Two small islands near the south shore of Kennebecasis bay.	"	10	Transferred to the Dominion Government at Confederation.
		Charlotte.			
19	Canons River	In the parish of St. James, at the mouth of the Canons river, on the left bank of the Cheputneticook river.	Amalecite	100	Transferred to the Dominion Government at Confederation.
		Carleton.			
23	Woodstock	On the right bank of the River St. John, about two miles south of Woodstock.	"	200	Purchased May 22, 1851, by the Provincial Government, for the use of the Amalecite tribe of Indians at the Maductic. No. 281.
		Sunbury.			
26	Oromocto	In the parish of Burton, on the right bank of the River St. John.	"	125	Purchased by the Dominion Government, Sept. 12, 1895.
		QUEBEC.			
1	Restigouche	At the mouth of the Restigouche river, adjacent to the west boundary of the township of Mann, county of Bonaventure.	Micmac	8,869 42	This reserve is a portion of the area of land set apart and appropriated under the statute 14 and 15 Victoria, chapter 106, for the benefit of the Indian tribes in Lower Canada. The total area of land set apart by the statute amounted to 230,000 acres.
2	Maria	At the mouth of the Grand Cascapedia river, in the township of Maria, county of Bonaventure.	"	116·00	Settled on and claimed by the Indians from time immemorial.

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

QUEBEC—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
3	Betsiamits	At the mouth of the Betsiamits river, on the north shore of the St. Lawrence river, in the county of Saguenay.	Montagnais, Tadousacs, Papinachois, Nauthapis and other nomadic tribes.	63,100·00	A portion of the area set apart under the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)
5	Oniatchouan	On the west shore of Lake St. John, in the county of Chicoutimi.	Montagnais of Lake St. John and Tadousac.	3,779·06	Originally consisted of the entire township, containing 23,000 acres, set apart under the provisions of the Act 14 and 15 Vic., chap. 106. The whole township, with the exception of the present reserve, has been surrendered, and is being sold for the benefit of the Indians.
7	Lorette	In the county of Quebec, about eight mile from the city.	Hurons of Lorette	26·75	This village, which is said to have contained an area of 40 arpents, had been long occupied by the Hurons. They were confirmed in possession by a deed of gift from the Jesuit Fathers, dated February 26, 1794. The boundaries were defined by order of the courts in 1887.
8	Quarante Arpents	In the county of Quebec, about three miles from Lorette.	" "	1,352·00	Gift from the Jesuit Fathers, dated March 7, 1742, and again confirmed in the deed of gift of February 26, 1794, mentioned above.
9	Rocmont	In the township of Rocmont, county of Portneuf.	" "	9,600·00	Set apart under the provisions of the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)
10	Crespieul	West of the township of Crespieul, in the county of Lake St. John.	Abenakis	8,374·85	Set apart under the provisions of the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)
11	Becancour	Near Becancour, in the county of Nicolet. The reserve consists of lot No. 582 in the concession of the Indian Village, and Islands Nos. 574, 488 and 489 in the Becancour river.	Abenakis of Becancour	148·63	These Indians were once the proprietors of the seigniory of Becancour, granted to them April 30, 1708. In 1760 they sold the whole of their territory, except the lot and islands which now constitute their reserve.
12	Pierreville	At Pierreville, in the county of Yamaska. Consists of the following lands situated in the seigniories of Pierreville and St. François du Lac, viz.:	Abenakis of St. Francis.	1,538·50	Two large grants of land in Pierreville and St. Francis were made in 1700 and 1701 to these Indians by private parties. The present reserve is all they now possess, the whole of the remainder having been leased or otherwise conceded to whites.

Cadastral No.	Arp. Per.
1217: Pierreville Reserve	1,228·00
1218: 2nd con. St. Jacques or No. 1 on the especial plan	85·20
1219: 3rd con. St. Jacques or No. 24 on the especial plan.	90·00

		880 : a part of Ronde island.. 280·00 850 : a small island lying between Atcombac and Au Pin island.. ... 0·14 874 : parts of an island opposite Pierreville reserve 11·81 875..... 9·62 482 : 3rd con. parish of St. Francis or No. 41 on the especial plan..... 114·75 972 : a lot in the village of Pierreville. ... ... 1·40 Total arpents..... 1,820·92			
14	Caughnawaga.....	On the south bank of the St. Lawrence river, in the county of Laprairie.	Iroquois of St. Louis..	1,2625·17	Part of a grant made in 1680 to the Jesuits for the conversion, instruction and subsistence of the Iroquois. The title was vested in the Iroquois under the supervision of the Indian Department, April 15, 1762, by judgment of Military Council assembled at Montreal.
15	St. Regis.....	On the south bank of the St. Lawrence river, in the township of Dundee, county of Huntingdon. The reserve consists of the following lands : St. Regis village and reserve..... 605·00 Lots in Dundee, purchased in 1892. 731·98 Lots in Dundee, purchased in 1897. 102·89 Cadastral list of islands .....1,527·05 Islands in the St. Lawrence reported on by agent John Davidson, not included in the cadastral list.. 3,919·83 6,886·75	Iroquois of St. Regis..	6,886 75	This reserve is a part of the hunting grounds of the Iroquois which were in their possession at the time of the French rule in this country.
17	Doncaster.....	The southerly portion of the township of Doncaster, in the county of Montcalm.	Iroquois of Sault St. Louis and Iroquois of Lake of Two Mountains.	18,500·00	Set apart under the provisions of the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)
18	Maniwaki.....	At the confluence of the Desert river with the Gatineau river, in the county of Ottawa.	Algonquins of the Lake of Two Mountains.	44,708·66	Set apart under the provisions of the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)
19	Temiscaming.....	At the head of Lake Temiscaming in the county of Pontiac.	Temiscaming band Ottawas and Algonquins.	15,590·00	Set apart under the provisions of the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)
21	Whitworth.....	Lots 27, 28 and 29, concession 12, township of Whitworth, county of Temiscouata.	Amalecites of Isle Verte and Viger.	399·00	Purchased by the Department of Indian Affairs, March 31, 1877.
22	Cacouna.....	Lot No. 66, shown on the cadastral plan of the village of Cacouna, county of Temiscouata.	Amalecites of Isle Verte and Viger.	0·44	Purchased by the Department of Indian Affairs, July 8, 1891.
23	Weymontaching.....	On the north side of the St. Maurice river, opposite the mouth of the Manonan river, county of Champlain.	Algonquins and Tête de Boule.	7,407·95	Set apart under the provisions of the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

QUEBEC *Concluded.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
24	Couconcache	On the north side of the St. Maurice river, opposite the mouth of the outlet from Lake Couconcache, county of Champlain.	Algonquins and Tête de Boule.	380·00	Set apart under the provisions of the Act 14 and 15 Vic., chap. 106. (*See* No. 1.)
25	Escoumains	Near the mouth of the Escoumains river, township of Escoumains, county of Saguenay.	Montagnais	97·00	Purchased in 1892 by the Department of Indian Affairs.

ONTARIO.

1	Maganettawan	On the River Maganettawan	Ojibbewas of Lake Huron.	8,647.50	Reserved under the provisions of the Robinson Huron Treaty, September 9, 1850; subsequently surveyed and confirmed by O. C., January 31, 1853.
2	Henvey Inlet	At Henvey inlet, on Georgian bay	" "	24,930	Robinson Huron Treaty. (*See* note to No. 1.)
3	Point Grondin	At Point Grondin, north shore of Lake Huron.	" "	10,100	" "
4	Whitefish River	At the mouth of Whitefish river, north shore of Lake Huron.	" "	10,600	" " The reserve originally consisted of 20,120 acres. In 1867 the north part of the reserve, containing 9,520 acres, was surrendered.
5	Spanish River	At the mouth of Spanish river, north shore of Lake Huron.	" "	28,000	Robinson Huron Treaty. (*See* note to No. 1.)
6	Whitefish Lake	At Whitefish lake, about 16 miles north of Collins inlet, north shore of Lake Huron.	" "	43,755	Set apart under the provisions of the Robinson Huron Treaty. The reserve was not surveyed until 1884. The boundaries as then surveyed were amended and established by judgment of the court of January 21, 1889. (Attorney General of Ontario *vs.* Francis *et al.*)
7	Serpent River	The peninsula east of the mouth of Serpent river, north shore of Lake Huron.	" "	27,480	Robinson Huron Treaty. (*See* note to No. 1.)
8	Mississagi River	At the mouth of Mississagi river, north shore of Lake Huron.	" "	5,636	" "
9	Dokis	On French river	" "	30,300	" "
10	Nipissing	On the north shore of Lake Nipissing	" "	80,640	" "
11	Wanapitae	At Lake Wanapitae	" "	2,560	Set apart under the provisions of the Robinson Huron Treaty. Not confirmed by the Provincial Government.
12	Thessalon	At the southeast corner of the township of Thessalon, north shore of Lake Huron.	" "	2,307	Robinson Huron Treaty. The reserve originally consisted of the entire township, all of which, except the present reserve, has been surrendered for sale for the benefit of the Indians. (*See* note to No. 1.)
13	French River	At Ogawaning, on French river	"	4,560	Robinson Huron Treaty. "

14	Garden River	At Garden river, near Sault Ste. Marie	" "	24,126	Robinson Huron Treaty. The reserve originally consisted of a tract containing about 130,000 acres, all of which, except the present reserve, has been surrendered for sale for the benefit of the Indians. (*See* note to No. 1.)
15A	Goulais Bay	At Batchewaung bay, east end of Lake Superior.	" "	1,595	The original reserve contained about 157,440 acres, was set apart under the Robinson Huron Treaty, subsequently surveyed and finally confirmed by O. C., January 31, 1852. It was surrendered for sale for the benefit of the Indians in 1859. The present reserve at Goulais bay is a portion of the original reserve set apart by Orders in Council in 1879 and 1885.
15 B	Whitefish Island	At Sault Ste. Marie	" "	20	Robinson Huron Treaty. Part of the 15th reservation.
16	Parry Island	In Georgian bay, near its eastern shore	" "	19,000	Under the provisions of the Robinson Huron Treaty the reserve was located on the mainland. The island was surveyed in lieu of that location, and the survey approved by the Commissioner of Crown Lands November 22, 1853.
17	Shawanaga	In the township of Shawanaga, Parry Sound district.	" "	8,475	Robinson Huron Treaty. (*See* note to No. 1.)
17A	Naiscoutaing	In the townships of Wallbridge and Harrison, Parry Sound district.	" "	2,650	" "
17 B		Lots 34 and 35, concession 7, township of Shawanaga, Parry Sound district.	Shawanaga band of Ojibbewas of Lake Huron.	178	Vested by Order in Council of the Provincial Government, dated December 31, 1877, in the Dominion Government in trust for the Shawanaga band of Indians so long as the said land continues to occupy the said lots.
18	Temoganing	At Lake Temoganing	A band of Ojibbewas of Lake Huron who had not been provided with a reserve under the provisions of the Robinson Huron Treaty.	64,000	Surveyed in 1884. This reserve has not been confirmed by the Provincial Government of Ontario.
19	Cockburn Island	On Cockburn island, Lake Huron	Ottawas and Chippewas of Lake Huron.	864	The Manitoulin islands and islands on the north shore of Lake Huron were set apart, August 9, 1836, by Sir Edmund Head, as a reserve for the Ottawas and Chippewas and any other Indians who should be allowed to settle thereon.
20	Sheshegwaning	In the tp. of Robinson, Manitoulin island	" "	5,000	
21	Obidgewong	" tps. of Mills and Burpee " "	" "	732	
22	West Bay	" tp. of Billings, Manitoulin island	" "	8,399	
23	Sucker Creek	" " Howland " "	" "	1,665	The Manitoulin and adjacent islands were surrendered for sale for the benefit of the Indians October 6, 1862, and under the provisions of this surrender the present reserves, numbered 19 to 26 inclusive, were set apart.
24	Shegniandah	" " Shegniandah " "	" "	5,106	
25	Sucker Lake	" " Assiginack " "	" "	599	
26	Manitoulin Island (unceded portion).	The eastern peninsula of " "	" "	105,300	
27	Cape Croker	Saugeen peninsula	" "	15,586	The Saugeen peninsula was set apart as an Indian reserve August 9, 1836, by Sir Edmund Head, and surrendered for sale for the benefit of the Indians, October 13, 1854. Reserves Nos. 27, 28 and 29 were set apart under the provisions of the said surrender of October 13, 1854.
28	Chief's Point	" "	" "	1,280	
29	Saugeen reserve	At the southwestern corner of the Saugeen peninsula.	" "	9,020	

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

ONTARIO—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
29 A	Hunting Reserve	In the township of St. Edmund	Chippewas of Saugeen and Cape Croker.	3,800	Set apart from unsold Indian lands by Order in Council of November 19, 1896, as hunting grounds for the Chippewa bands of Saugeen and Cape Croker. (File 160,542.)
30	Christian Islands, viz.:—Christian, Hope and Beckwith.	In Lake Huron	Chippewas of Lakes Couchiching, Simcoe and Huron.	13,300	These islands were reserved in the surrender made by these Indians, June 5, 1856, of the islands situated in Lake Huron which they claimed. The islands in Lake Huron claimed by these Indians were ceded in error in 1850 by the Ottawas and Chippewas of Lake Huron.
31	Gibson or Watha	The eastern portion of the township of Gibson, Muskoka district.		25,582	Purchased from the Provincial Government in 1881 for such members of the Oka band of Indians as might desire to settle there.
32	Rama	In the township of Rama, county of Ontario.	Chippewas of Lakes Couchiching, Simcoe and Huron.	2,000	Purchased from private parties at different dates between 1843 and 1848.
33	Georgina Island	Georgina, Snake and Fox islands in Lake Simcoe, and other islands in Lake Couchiching.	Chippewas of Lakes Couchiching, Simcoe and Huron.	3,574	These islands have remained in the possession of the Indians, and have never been ceded by them by treaty or purchase.
34	Scugog	On the island in Lake Scugog	Mississaguas of Scugog.	800	Purchased by these Indians with the proceeds of their own annuities, November 3, 1843.
35	Mud Lake	On Mud lake, in the township of Smith, county of Peterborough.	Mississaguas of Mud Lake.	1,664	Granted in 1837 to the New England Company. Transferred to the Dominion Government in trust for the Indians by deed dated June 4, 1898, reserving 115 64 ac. The whole 1,664 acres (including the said 115 64 ac.) were transferred to the Dominion Government by deed dated May 12, 1900.
36	Rice Lake	On the north shore of Rice lake, in the county of Peterborough.	Mississaguas of Rice Lake.	1,860	1,120 acres of this reserve was granted in 1834 to trustees for the benefit of Indian tribes in the province. The remainder of the reserve was purchased by the Indians with their own funds.
36 A	Islands in the Trent waters	In the counties of Peterborough and Victoria.	Mississaguas of Rice, Mud and Scugog Lakes.	.....	Claimed by these Indians not to have been included in treaty of 1818, and claim subsequently admitted by the Crown Lands Department.
37	Alnwick	In the township of Alnwick, county of Northumberland.	Mississaguas of Alnwick.	3,282	Purchased from private owners at different dates between 1836 and 1870.
37 A	Sugar Island	In Rice lake, in front of the 4th and 5th concessions of Otonabee.	Mississaguas of Alnwick.	100	Purchased for the Alnwick Indians by deed from Wm. Kempt, dated January 13, 1899, for $775, from their funds.

38	Tyendinaga	On the bay of Quinte—the southern part of the township of Tyendinaga.	Mohawks of the bay of Quinte.	18,600	The reserve consisted originally of 92,700 acres granted under letters patent from the Crown in 1793, all of which, except the present reserve, has been surrendered and sold and the proceeds applied for the benefit of the Indians. Salmon island and marshes were added by Order in Council, November 13, 1900. (File 78,703.)
39	Golden Lake	At the southern end of Golden lake, in the county of Peterborough.	Algonquins of Golden lake.	1,560	Purchased by the Dominion Government from the Government of Ontario in 1870 as a reserve for these Indians.
40	Tuscarora	The township of Tuscarora and parts of the townships of Oneida and Onondaga.	The Six Nations, consisting of the Mohawks, Oneidas, Onondagas, Tuscaroras, Cayugas, Senecas and Delawares.	49,696	A tract six miles wide on each side of the Grand river, was granted to the Six Nations in 1784 by Sir F. Haldimand, containing about 694,910 acres. This grant was confirmed to them by letters patent in 1793 by Governor Simcoe. All of the tract, except the present reserve, has been surrendered in portions from time to time and sold for the benefit of the Indians. In 1847 the Six Nations invited the Mississaguas of the Credit to settle on their reserve, and offered them a free grant of 6,000 acres for the purpose. A number accepted, who now reside in the southwest corner of the reserve.
41	Oneida	In the township of Delaware, county of Middlesex.	Oneidas of the Thames.	4,620	Purchased for these Indians by the Government in 1840 with their own money which they brought with them from the United States.
42	Caradoc	In the township of Caradoc, county of Middlesex.	Chippewas of the Thames and Munsees	10,800	Reserved by the Chippewas in the cession made by them of the 'Longwood Tract' in 1819. A small portion of the reservation was surrendered in 1834 and sold for the benefit of the Indians.
43	Stony Point or Aux Sables	In the township of Bosanquet, county of Lambton.	Chippewas of Chenail Ecarté and St. Clair.	2,555	Reserved by these Indians in the cession of a large tract in the London and Western districts made by them in 1827.
44	Kettle Point	"	"	2,224	" " "
45	Sarnia	In the township of Sarnia, county of Lambton.	"	4,943	" " "
46	Walpole Island	At the head of Lake St. Clair	Chippewas and Pottawattamies of Walpole island.	10,480	The Chippewas settled on the island in 1831 by order of the Government. The island appears to have been then set apart by the Government as a Crown reserve to be used for the purpose of settling Indians thereon. The Pottawattamies came from the United States in 1841, and, on petition, were permitted by the Government to settle on the island.
47	Orford	In the township of Orford, county of Kent.	Moravians of the Thames.	3,010	The reserve originally consisted of 51,160 acres, situated in the townships of Zone and Orford, and was set apart by Order in Council in 1793. All the reservation, except the present reserve, has been surrendered and sold for the benefit of the Indians.
48	Michipicoten	On the Michipicoten river, about one mile from its mouth.	Ojibbewas of Lake Superior.	178	Surveyed in 1885 for the Indians who resided on the land. This reserve has not been confirmed by the Provincial Government.

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

ONTARIO *Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
49	Gros Cap	On the north shore of Lake Superior, about a mile west of Michipicoten river.	Ojibbewas of Lake Superior.	10,180	Set apart in accordance with the provisions of the Robinson Superior Treaty.
50	Pic River	On the Pic river, near its mouth	" "	800	Surveyed in 1885 for the Indians who resided on the land. These reserves have not been confirmed by the Provincial Government.
51	Pays Plat	At Pays Plat, north shore of Lake Superior.	" "	605	" " "
52	Fort William	Near the west end of Lake Superior	" "	14,500	Set apart under the provisions of the Robinson Superior Treaty.
53	Red Rock	On Nipigon river	" "	468	Surveyed in 1885 for the Indians who resided on the land. Not confirmed by the Provincial Government.
54	McIntyre Bay	On the south shore of Lake Nipigon	" "	585	Surveyed in 1885 for the Indians of Lake Nipigon. Not confirmed by the Provincial Government.
55	Gull River	At the mouth of Gull river, on the west shore of Lake Nipigon.	" "	9,825	Set apart under the provisions of the Robinson Superior Treaty. Surveyed in 1887. Not confirmed by the Provincial Government.
56	Island Point	On the west shore of Lake Nipigon	" "	135½	Surveyed in 1885 for the Indians of Lake Nipigon. These reserves have not been confirmed by the Provincial Government.
57	Jackfish Island	A small island near the west shore of Lake Nipigon.	" "	Not surveyed.	" " "
58	Long Lake	At the north end of Long lake.	" "	612	Surveyed in 1886 for the Indians residing on the land. Not confirmed by the Provincial Government.
59	Cornwall Island	In the River St. Lawrence near the boundary between Ontario and Quebec.	Iroquois of St. Regis	2,050	This and adjacent islands form part of the reserve of these Indians held by them from the time French rule began in this country.
60	Saugeen Indians' hunting ground.	Lots 11 to 20, inclusive, in concessions III and IV; lots 11 to 18 and lot 20 in concessions I and II, all east of the Bury road, township of St. Edmund, county of Bruce.	Saugeen and Cape Croker bands.	3,800	Set apart by Order in Council of November 16, 1896. Lots 11, 12, 13, 14, 15, 16, 17, 18 and 20, in concessions I and II, E. B. R., are set apart for the Saugeen reserve Indians, and lots 11 to 20, inclusive, in concessions III and IV, E. B. R., for the Cape Croker band.

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

TREATY No. 3—ONTARIO—*Continued.*

No.	Name.	Area. Acres.	Locality.
10	Little Forks	1,920·13	Rainy river.
11	Manitou Rapids	5,736·50	"
12	Long Sault No. 2	5,046·75	"
13	" 1	6,366·73	"
14	'The Bishop', Hungry Hall No. 1	3,982·66	"
15	'Paskonkin', Hungry Hall No. 2	2,300·94	"
15M	Wild Lands Reserve	20,671·27	"
16A	Rainy Lake	100·00	Rainy lake
16D	"	11,200·00	"
41	Agency Reserve, Fort Frances	170·00	"
17A	Rainy Lake (Niacatchewenin)	3,761·50	"
17B		2,439·75	Clear Water lake.
18B		4,586·88	Rainy lake.
18C		3,861·33	"
21	English River or Grassy Narrows	10,244·00	English river.
21	Wabaskang	8,042·00	Wabaskang lake.
22A1	Lac des Mille Lacs	3,750·70	Lac des Mille Lacs.
22A2	Seine River	8,476·70	Seine river.
23	Sturgeon Falls	6,825·20	"
23A	Seine River	2,003·20	"
23B	"	2,234·80	"
24C	Kawaiagamot (Sturgeon Lake)	5,948·30	Sturgeon lake.
25D	Neguaquon Lake (Lac la Croix)	15,355·30	Lac la Croix.
26A	Rainy Lake (Nickickonesemenecanning)	4,850·00	Rainy lake.
26B	" "	2,640·00	"
26C	" "	2,737·00	"
27	Wabigoon Lake	12,872·00	Wabigoon lake.
27	Eagle Lake	8,882·00	Eagle lake.
28	Lac Seul or Lonely Lake	49,000·00	Lac Seul.
29	Islington	20,954·00	Winnipeg river.
29	Swan Lake	3,277·00	Swan lake.
29	One Man's Lake	668·00	English river.
30	Agency Reserve (Sabaskasing)	640·00	Lake of the Woods.
31A	Naongashing	1,280·00	"
31B	Lake of the Woods	726·00	"
31C	"	800·00	"
31D	Big Island	915·00	"
31E	"	1,920·00	"
31F	"	Not surveyed.	"
31G	Lake of the Woods	275·00	"
31H and pt. of 31G.	Big Island	1,541·00	"
31J	Shoal Lake	1,280·00	Shoal lake.
32A	Whitefish Bay	4,865·20	Lake of the Woods.
32B	Yellow Girl Bay	4,454·30	"
32C	Sabaskong Bay	1,280·00	"
33A	Whitefish Bay	3,091·00	"
33B	Northwest Angle	3,209·00	"
34	Lake of the Woods	641·00	"
34A	Whitefish Bay	1,529·20	"
34B	Shoal Lake, 1st Part	640·00	Shoal lake.
34B	" 2nd Part	426·00	"
34C	Northwest Angle	1,261·80	Northwest Angle river, in Manitoba.
34C	" "	750·00	Lake of the Woods.
35A	Naongashing	1,280·00	"
35B	Obabikong	1,760·00	"
35C	Sabaskong Bay	1,920·00	"
35D	"	1,280·00	"
35E1	Little Grassy River, 1st Part	640·00	"
35E5	Lake of the Woods, 2nd Part	Not surveyed	"
35F	Sabaskong Bay	1,280·00	"
35G	Big Grass River	8,960·00	"
35H	Sabaskong Bay	640·00	"
35J	Lake of the Woods	3,481·60	"

Schedule of Indian Reserves in the Dominion—*Continued.*

TREATY No. 3—ONTARIO *Concluded.*

No.	Name.	Area, Acres.	Locality.
36	Buffalo Point	5,763·00	Lake of the Woods, in Manitoba.
37	Big Island	1,946·00	" "
37	Rainy River	3,687·00	Rainy river.
37A	Shoal Lake	1,920·00	Shoal lake, in Manitoba.
37B	Northwest Angle (approx.)	840·00	Lake of the Woods.
37B	Lake of the Woods	262·00	"
37C	Northwest Angle River	690·00	Northwest Angle river, in Manitoba.
38A	Near Rat Portage	8,000·00	Lake of the Woods.
38B	" "	5,289·90	"
38C	The Dalles, near Rat Portage	8,064·00	Winnipeg river.
38D	Lake of the Woods	Not surveyed.	Certain islands in Lake of the Woods.
39	West Shore Shoal Lake	1,031·00	Partly in Manitoba.
39	Northwest Shore Shoal Lake	8,415·00	"
40	" "	6,759·00	"
39	Islands in "	Not surveyed.	"
40			

Indian Reserves in Manitoba and the North-west Territories.

TREATY No. 1.

		Square Miles.	
1	St. Peters	80·00	St. Andrew's and St. Clement's, Manitoba.
2	Roseau River	20·86	Franklin, Manitoba.
2A	" Rapids	1·25	" "
3	Fort Alexander	31·84	Nepahwin and Powassin, Man.
4	Brokenhead River	21·90	St. Clement's, Manitoba.
5	Sandy Bay, Lake Manitoba	19·00	Westbourne.
6	Long Plain, Assiniboine River	16·90	Portage la Prairie and South Norfolk, Man.
7	Swan Lake, not surveyed	Approx. 15·06	Lorne, Man.
8	Hamilton's Crossing	1·00	South Norfolk Man.

TREATY No. 2.

43	Big Jackhead, Lake Winnipeg	4·20	Winnipegosis, Man.
44	Fisher River, Lake Manitoba	21·00	Norquay, Man.
45	Waterhen River "	7·20	Winnipegosis, Man.
46	Dog Creek "	14·80	Patterson, Man.
48	Sandy Bay, Lake St. Martin	5·00	"
49	The Narrows "	6·30	"
50	Fairford, Lakes St. Martin and Manitoba	18·30	"
51	Crane River, Lake Manitoba	12·40	"
52	Ebb and Flow "	16·90	"
57	Birdtail Creek, Assiniboine River	10·75	Archie and Miniota, Man.
58	Oak River "	15·20	Woodworth "
59	Oak Lake, Pipestone Creek	4·00	Pipestone "
60	Turtle Mountain	1·00	Winchester "
61	Riding Mountain House	8·75	Strathclair "
61A	Clear or Clearwater Lake	1·15	Riding Mountain "
.....	Temporary hay lands, S.W. ¼ 20, 20, 21 W. I. M.	·25	" "
62	Waywayseecappo, Birdtail Creek	39·00	Birdtail Creek and Rossburn, Man.
62A	Fishing Station, sec. 24, 20, 20 W. I. M.	·49	Rossburn, Man.
63	The Gambler	1·21	Ellice "
63A	Valley River	18·13	Gilbert Plains, Man.
66A	Pine River, Lake Winnipegosis	14·30	Roseberry "
	Frac. Tps. 35, 36 and 37, R. 19, W.I.M. (not surveyed) have been added to the Pine River reserve. O.C. Jan. 1, 1902. (File 162,550.)		
67	Rolling River	20·00	Harrison "
68	Moose Mountain, Pheasant Rump	.....	Surrendered. (File 69,244.)
69	" Ocean Man.		
70	" White Bear	44·90	Tps. 9 and 10, rgs. 2 and 3, W. of 2nd I. M. Assiniboia.

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SCHEDULE of Indian Reserves in the Dominion—Manitoba and Northwest Territories—*Continued.*

TREATY No. 4.

No.	Name.	Area, Square Miles.	Locality.
64	Gabriel Côté	56·50	Near Fort Pelly, Assiniboia.
65	The Key	38·00	" "
65 A	Dawson Bay, Mouth of Shoal River	1·50	Lake Winnipegosis, Manitoba.
65 B	" Steep Rock Point	3·55	" "
65 C	Swan Lake, Woody and Birch Rivers	3·03	Swan lake "
65 D	Dawson Bay, Dog Island	0·43	Lake Winnipegosis "
65 E	" ½ mile west of Shoal River	0·08	" "
66	Keeseekoose	28·60	Near Fort Pelly, Assiniboia.
.....	Hay lands	11·00	" "
71	Kakeesheway (Round Lake)	82·60	Round lake.
72	Kakewistahaw	73·00	Qu'Appelle riv., between Round and Crooked lakes, Assiniboia.
72 A	" fishing grounds	0·15	Crooked lake "
73	Cowessess	78·00	" "
73 A	Little Bone	10·90	Crescent lake "
74	Sakimay	33·90	Crooked lake "
74 A	Shesheep	5·60	" "
75	Piapot	53·98	Qu'Appelle river "
75 A	Hay lands	4·48	" "
76	'Carry the Kettle' or 'The man who-took-the-Coat'	73·21	Indian Head "
78	Standing Buffalo	7·60	Qu'Appelle lake "
79	Pasquah Fishing Lakes	60·15	Near Qu'Appelle "
80	Muscowpetung	59.50	" "
80 A	Fishing Grounds at Long Lake	2·23	Little Arm river "
80 B	Hay lands, Muscowpetung and others	0·72	Near Qu'Appelle "
81	Peepeekeesis	41·60	File hills "
82	Okanase	22·36	" "
83	Star Blanket	21·50	" "
84	Little Black Bear	46·50	" "
85	Muscowequan	36·00	Little Touchwood hills "
86	George Gordon	48·00	" "
87	Day Star	24 00	Big Touchwood hills "
88	The Poor Man	42·50	" "
89	Yellow Quill	34·50	Fishing lake "
90	"	16·17	Nut Lake, Saskatchewan.
.....	Regina Industrial School	0·50	Regina, Assiniboia.
.....	Qu'Appelle "	1·37	Qu'Appelle "

TREATY No. 5.

9	Black River	3 10	Lake Winnipeg, Manitoba.
10	Hole or Hollowwater River	5·20	" "
11	Loon Straits	1·77	" "
12	Blood Vein River	5·20	" "
13	Berens River	11·50	" "
14	Little Grand Rapids, Berens River	8·75	Crow lake "
15	Pekangekum	3·50	Lake Pekangekum, Keewatin.
16	Poplar River	5 90	Lake Winnipeg "
17	Norway House	16·70	Norway House "
19	Cross Lake	10·90	Nelson river "
20	Cumberland House	6·29	Pine Island lake, Saskatchewan.
21	The Pas	10 00	The Pas "
21 A	Indian Pear Island	2·00	" "
21 BtoK	For Pas Band	2·70	" "
27	Birch River	8·40	Saskatchewan river "
28 A	Shoal Lake	3·50	Carrot river "
29	Near Red Earth	4·23	" "
29 A	Red Earth	3·19	" "
31 A	Moose Lake	0·70	Moose lake "
31 B	"	0·23	" "
31 C	"	4·40	" "

SCHEDULE of Indian Reserves in the Dominion—Manitoba and Northwest Territories—*Continued.*

TREATY No. 5—*Concluded.*

No.	Name.	Area, Square Miles.	Locality.
31 D	Moose Lake	4·27	Moose lake, Saskatchewan.
31 E	"	0·31	" "
32	Chemawawin	4·75	Cedar lake "
33	Grand Rapids, Saskatchewan River	7·26	Lake Winnipeg "

TREATY No. 6.

91	Kinistino	15·06	Tp. 42, R. 16. W. 2 M.
94	'Moose Woods' Chief White Cap	5·80	S. Saskatchewan river, Assa.
94 A	Wahspaton	3·75	Prince Albert, Saskatchewan.
95	One Arrow	16·00	Near Batoche "
96	Okemassis	44·00	Near Fort Carlton "
97	Beardy		
99	Muskoday or John Smith	37·40	South of Prince Albert "
100	James Smith or Fort à la Corne	27·80	Fort à la Corne "
100 A	Carrot River for Cumberland Indians	65·00	" "
101	Sturgeon Lake	34·40	N.W. of Prince Albert "
102	Paddling or Muskeg Lake	42·00	West of Prince Albert "
103	Mistawasis	77·00	Snake plain "
104	Ahtahkakoop's	67·17	Sandy lake "
105	Flying Dust	14·00	Meadow lake "
106	Montreal Lake (Wm. Charles)	23·00	Montreal lake "
106 A	Wm. Charles and James Roberts	56·50	Little Red river "
108	Red Pheasant	38·00	Near Battleford "
109	Musquito	36·00	" "
110	'Grizzly Bear's Head' and 'Lean Man'	36·20	" "
111			
112	Moosomin	23·00	" "
112 A	Hay lands for Bands 112 and 115	2·00	" "
113	Sweet Grass	61·13	" "
113 A	Strike-him-on-the-Back	3·32	" "
113 B	Hay lands for 113 and 113 A	2·00	" "
114	Poundmaker	30·00	" "
115	Thunderchild	24·00	" "
115 A	"	8·50	" "
116	'Little Pine' and 'Lucky Man'	25·00	" "
118	Kenemotayoo reserve	46·35	Stony and Whitefish lakes.
119	Seekaskootch	60·00	Near Onion lake, Saskatchewan.
120	Makaoos	22·00	" "
121	Ooneepowhayoos	33·00	Frog lake "
122	Puskeeahkeewenin	40·00	" "
123	Keheewin	28·00	Long lake "
125	Pakan, Little Hunter and Blue Quill	115·00	Saddle lake "
125 A	Cache Lake (adjoins 125)	14·00	" "
127	Blue Quill (included in 125)		
128	Pakan, Jas. Seenum	17·50	Whitefish lake "
132	Michel Callihoo	40·00	Near Edmonton "
133	Alexis	23·00	Lake St. Anne, near Edmonton, Saskatchewan.
133 A	White Whale Lake	32·70	Wabamun lake, near Edmonton, Saskatchewan.
133 B			
134	Alexander	41·00	Near Edmonton, Saskatchewan.
135	Stony Plain (Tommy la Potac or Enoch)	30·29	" "
136	Papaschase (sold)		" "
137	Samson	61·50	South of Edmonton "
138	Ermineskin	61·50	" "
138 A	Pigeon Lake (Fishing reserve)	7·78	" "
139	Bobtail's	31·50	" "

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SCHEDULE of Indian Reserves in the Dominion—Manitoba and Northwest Territories.—*Concluded.*

TREATY No. 7.

No.	Name.	Area, Square Miles.	Locality.
142	Bear's Paw (Stony)		
143	Jacob "	109·00	Near Morleyville, Alberta.
144	Chiniquay "		
145	Sarcee	108·00	Near Calgary "
146	Blackfoot	470·00	" "
147	Peigan	181·40	Near Macleod "
148	Blood	546·76	" "
A	Timber limit for 148 on Belly River	6·50	South of the Blood reserve, Alberta.
B	" 147	11·50	West of the Peigan reserve, Alberta.
C	" 146, Castle Mountain	26·50	West of the Rocky Mountain park, Alberta.
	Agency reserve at Macleod	·003	Part of sec. 13, tp. 9, R. 26, W. of 4th M.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

YUKON DISTRICT.

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
2	Moosehide Creek.....	At the mouth of Moosehide creek, on the east shore of the Yukon river, about three miles below the town of Dawson.	The Indians of the locality.	160	Set apart by O. C. of March 27, 1900. Amended by O. C. of October 9, 1900, under which the tract occupied by the English church is excepted from the reservation. (File 153377.)
1	Lake Laberge.....	At the upper end of Lake Laberge.	The Indians of the locality.	320	Set apart by O. C. of July 13, 1900.

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" Williams Lake.
Fort George, Babine.
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Gelangle, Babine.
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Grief Island, Northwest Coast.
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Hamilton Point, West Coast.
Harkhom, Kwawkewlth.
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Hesquiat, West Coast.
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Hoonees, Northwest Coast.
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" New, Babine.
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Kitskahaws, Babine.
Kitsumkelum, Northwest Coast.
Kitwangar, Babine.
Kitwillucshilt, Northwest Coast.
Kitzowit, Kamloops.
Klaalth, Fraser.
Klahoose, Fraser.
Klaklacum, Fraser.
Klahkamich, Kamloops.
Klahkowit, Kamloops.
Klapthlon, Northwest Coast.
Klaskish, Kwawkewlth.
Kleetlekut, Kamloops.
Klehkoot, West Coast.
Kleyekwin, Fraser.
Kleykleyhouse, West Coast.
Klicksewy, Kwawkewlth.
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SCHEDULE of Indian Reserves in the Dominion—*Continued*

BABINE AGENCY, BRITISH COLUMBIA.

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	Blackwater	Cariboo district, on the right bank of Fraser river, ¾ mile above the mouth of the Blackwater river.	Blackwater	35	
2	Nahlquonate	Cariboo district, on the left bank of the Blackwater river, about one mile above the crossing of the trail from Quesnel to Stony creek.	"	217	Allotted by Commissioner O'Reilly, Oct. 6, 1892. Surveyed, 1894.
3	Ulkah	At foot of Bobtail lake, on the trail from Quesnel to Stony creek, Cariboo district.	"	157	Final confirmation, Sept. 21, 1895.
4	Umliisle	Cariboo district, at the foot of Eu-la-ta lake, on the trail from Quesnel to Stony creek.		128	
1	Fort George	Cariboo district, at confluence of Fraser and Nechaco rivers.	Fort George	1,366	
2		Cariboo district, on Fraser river, 18 miles above Fort George.		1,310	Allotted by Commissioner O'Reilly, Oct. 5, 1892. Surveyed, 1894.
3	Cheshaonecchock	Cariboo district, on left bank of Nechaco river at Duck lake.		304	Final confirmation, Sept. 21, 1895.
4	Salaquo	Cariboo district, on right bank of Nechaco river, at the mouth of Mud river.		115	
1	Nautley	Coast district, on the left bank of the Nechaco river, at the foot of Fraser lake.	Fraser Lake	1,117	
2		Coast district, on the northern shore of Fraser lake and adjoining the western boundary of the Hudson's Bay Co.'s claim at Fort Fraser.	"	149	
3	Vensischuck	Coast district, one quarter mile north of the trail from Quesnel to Fort Fraser and about one mile east of the Nechaco Ferry.	"	160	Allotted by Commissioner O'Reilly, Sept. 2, 1892. Surveyed, 1894. Final confirmation, Dec. 14, 1895.
4	Seaspunkut	Coast district, on the southern shore of Fraser lake, about 7 miles from Fort Fraser.	"	523	
5	Stellaquo	Coast district, at the western extremity of Fraser lake and at the mouth of Stellaquo river.	"	2,077	
1	Lachkaltsap	Cassiar district, about 35 miles southeast of Hazelton, on the Hagwilget river.	Hagwilget	1,333	
2	Coryatsaqua	Cassiar district, on the trail to Hazelton,	"	360	

		about two miles north of Lachkaltsap.			
3	Oschawwinna	Coast district, on the Fraser lake trail, about 5 miles south of Lachkaltsap.	"	160	Allotted by Commissioner O'Reilly, Sept. 19, 1891. Surveyed, 1899. Final confirmation, Feb. 26, 1900.
4	Clotalairquot	Cassiar district, on the right bank of the Babine river, 3 miles north of the Hudson's Bay Co.'s post on Babine lake.	"	198	
5	No-cut	Cassiar district, on the left bank of the Babine river, 2 miles north of the Hudson's Bay Co.'s post on Babine lake.	"	197	A small island in the Babine river is included in this reservation.
6	Babine	Cassiar district, at the outlet of Babine lake and north of and adjoining the Hudson's Bay Co.'s claim.	"	695	
7	Timber reserve	Cassiar district, on the western shore of Babine lake, due west of the Hudson's Bay Co.'s claim.	"	92	Allotted by Commissioner O'Reilly, Sept. 19, 1891. Surveyed, 1899. Final confirmation, Feb. 26, 1900.
8	Casdeded	Cassiar district, on the eastern shore of Babine lake, 1 mile south of the Hudson's Bay Co.'s claim.	"	107	
9	Tsak	Cassiar district, on the western shore of Babine lake, about 16 miles south of the Hudson's Bay Co.'s post.	"	1,520	
10	Ne-tsaw-greece	Cassiar district, on the eastern shore of Babine lake, about 18 miles south of the Hudson's Bay Co.'s post.	"	226	
11	Ne-do-ats	Cassiar district, on the eastern shore of Babine lake, about 25 miles south of the Hudson's Bay Co.'s post.	"	977	Allotted by Commissioner O'Reilly, Sept. 19, 1891. Surveyed, 1899. Final confirmation, Feb. 26, 1900.
12	Timber reserve	Cassiar district, on the western shore of Babine lake, about 24 miles south of the Hudson's Bay Co.'s post.	"	336	
1	Hazelton	Cassiar district, at the forks of the Skeena river.	Hazelton	2,704	Allotted by Commissioner O'Reilly, Sept. 29, 1891.
2A	Ksoo-gun-ya	Cassiar district, on Two Mile creek, 2½ miles northeast of Hazelton.	"	360	Allotted by Comm'r. Vowell, Aug. 15, 1898.
3	Tsitsk	Cassiar district, on the Hagwilget river, 2½ miles east of Hazelton.	"	443	" " " Sept. 29, 1891.
4	Anlaw	Cassiar district, on the left bank of the Skeena river, 2½ miles north of Hazelton.	"	284	" " " Sept. 29, 1891.
	Kisgegas	Cassiar district, on the Babine river, about four miles from its confluence with the Skeena.	Kisgegas	2,115	Surveyed 1898. Final confirmation, April 24, 1899. Allotted by Comm'r. Vowell, August 3, 1898. Surveyed 1898. Final confirmation, Aug. 26, 1899.
1	Kispaiax	Cassiar district, about eight miles above Hazelton, and at the confluence of the Kispaiax and Skeena rivers.	Kispaiax	2,870	Allotted by Comm'r. O'Reilly, Sept. 26, 1891.
2	Sik-e-dakh	Cassiar district, on the right bank of the Skeena river, about 3½ miles above Hazelton.	"	1,266	Allotted by Comm'r. Vowell, July 21, 1898. 272 inches of water recorded from Alipakh creek.
3	Agwedin	Cassiar district, on the Kispaiax river, about three miles from its mouth.	"	780	Allotted by Comm'r. Vowell, August 5, 1898. Surveyed, 1900.
1	Kitseguecla	Cassiar district, on the Skeena river, about 11 miles below Hazelton.	Kitseguecla	2,483	Allotted by Comm'r. O'Reilly, Oct. 1, 1891.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

BABINE AGENCY, BRITISH COLUMBIA.—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
2	New Kitsegueela	Cassiar district, on the Skeena river, about seven miles below Hazelton.	Kitsegueela	1,032	1 and 2 surveyed, 1900. Final confirmation, Dec. 10, 1901.
3	Timber reserve	Cassiar district, on the left bank of the Skeena, about five miles below Hazelton.	"	217	No. 3 not surveyed.
1	Kitwangar	Cassiar district, on the banks of the Skeena at the mouth of Kitwangar river.	Kitwangar	3,385	
2	Timber reserve	Cassiar district, on the left bank of the Skeena, about a mile above reserve No. 1.	"	207	Allotted by Comm'r. O'Reilly, Oct. 2, 1893.
3	Squin-lix-stat	Cassiar district, on the right bank of the Skeena, about 10 miles below Kitwangar.	"	23	1, 2, 3 surveyed, 1900. Final confirm. Dec. 10, 1901.
4	Kwa-tsa-lix	Cassiar district, on the banks of the Skeena, about 22 miles below Kitwangar.	"	125	
5	Tum-bah	Cassiar district, on the left bank of the Skeena, about 2½ miles below Kitwangar.	"	147	These reserves have not been surveyed; the acreage is only approximate.
6	Kits-ka-haws	Cassiar district, on the right bank of the Skeena, about 5 miles below Kitwangar.	"	100	
7	Koomwats	Cassiar district, on Skeena river, about 8 miles above Lorne creek.	"	185	Allotted by Comm'r. O'Reilly, Sept. 16, 1893.
8	Chig-in-kaht	Coast district, on the right bank of the Skeena, about 1½ mile below Lorne creek.	"	103	
1	Kuldoe	Cassiar district, on the Skeena river, about seventy miles above Hazelton.	Kuldoe.	446	Allotted by Comm'r. Vowell, July 30, 1898. Surveyed 1898. Final confirmation, April 24, 1899.
1	McLeod	Cariboo district, at outlet of McLeod lake and adjoining the Hudson's Bay Co.'s land.	McLeod Lake.	286	Allotted by Comm'r. O'Reilly, Sept. 12, 1892. Surveyed 1894. Final confirmation, Dec. 27, 1895.
1	Necoslie	Coast district, at outlet of Stuart lake.	Necoslie	734	
2	Tat-sel-a-was	Coast district, on left bank of Stuart river, about 10 miles below Fort St. James.	"	136	
3	Sow-chea	Coast district, on southern shore of Stuart lake, about 9 miles from Fort St. James.	"	225	
4	Uz-ta	Coast district, on trail from Stuart lake to McLeod and about 5 miles from Fort St. James.	"	960	Allotted by Comm'r. O'Reilly, Sept. 30, 1892. Surveyed 1898. Final confirmation, January 11, 1899.
5	Aht-len-jees	Coast district, 6 miles southwest of Fort St. James.	"	300	
6	Chesla	Coast district, 8 miles southwest of Fort St. James.	"	360	
7	Kwot-ket qno	Coast district, southwest of and adjoining reserve No. 6.	"	160	

1	Stony Creek	Coast district, on Stony creek, between Tachic and Noolki lakes.	Stony Creek	6,370	
2	Sack-a-ni-te-cla	Coast district, on eastern shore of Noolki lake.	"	200	
3	Lake-town	Coast district, on northern shore of Noolki lake, near its western end.	"	540	
4	Meadow reserve	Coast district, on the trail from Quesnel to Fraser lake, and about a mile west of reserve No. 3.	"	160	Allotted by Comm'r. O'Reilly, Aug. 29, 1892. Surveyed 1894.
5	Clus-ta-lach	Coast district, on the southern shore of Tachic lake, and about six miles from reserve No. 3, on the trail from Quesnel to Fraser lake.	"	103	Final confirmation, December 5, 1895.
6	Noon-la	Coast district, on the right bank of the Nechaco river, at the crossing of the trail from Stony creek to Stuart lake.	"	115	
1	Taché	Coast district, on the northern shore of Stuart lake, at the mouth of Taché river.	Taché	1,655	
2	Pinchie	Coast district, on the northern shore of Stuart lake, at the mouth of Pinchie river.	"	728	
3	Nan-cut	Coast district, on Stuart lake, at the mouth of the Yi-ko river, and on the portage from Stuart to Babine lake.	"	372	Allotted by Comm'r. O'Reilly, Sept 27, 1892. Surveyed 1898.
4	U-caus-ley	Coast district, at the outlet of Petit lake, about four miles from reserve No. 3.	"	445	Final confirmation, January 11, 1899.
5	Car-soos-at	Coast district, on the northern shore of Stuart lake, about half-way between reserves Nos. 1 and 3.	"	124	
1	Gelangle	Coast district, on the northern shore of Trembleur lake, at the mouth of Middle river.	Trembleur Lake	945	
2	So-yan-do-star	Coast district, on the northern shore of Trembleur lake, about four miles east of reserve No. 1.	"	44	
3	Tees-lee	Coast district, on the left bank of Taché river, about half a mile from the outlet of Trembleur lake.	"	253	Allotted by Comm'r. O'Reilly, Sept. 23, 1892. Surveyed 1898. Final confirmation, January 11, 1899.
4	Ste-van	Coast district, an the left bank of Taché river, about two and a half miles from Trembleur lake.	"	49	
5	Grand Rapide	Coast district, on the Taché river, about seven miles from Trembleur lake.	"	584	

COWICHAN AGENCY, BRITISH COLUMBIA.

1	Beecher Bay	Metchosin district, on north shore of Beecher bay, sections 45, 46, 49, and an addition on the west of and adjoining section 49.	Beecher Bay	502	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

COWICHAN AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
2	...	Metchosin district, on eastern shore of Beecher bay, section 64.	Beecher Bay	235	
3	Creyke Point	Metchosin district, on western shore of Beecher bay.	"	2 50/100	Allotted by Joint Reserve Commission, June 11, 1877. Surveyed, 1878.
4	Wolf Island	Metchosin district, in Beecher bay	"	11	
5	Lamb Island	" "	"	50/100	
6	Fraser Island	" "	"	14	
7	Village Island	" "	"	3	
8	Island	" southwest of Smyth head.	"	2	
9	Island	" south of Smyth head	"	4	
10	Island	" opposite section 1	"	1	
11	Albert Head	Esquimalt district	"	4	Surrendered for a quarantine station.
1	Halalt Island	An island at the mouth of Chemainus river, Chemainus district.	Chemainus Halalt band	140	
2	Halalt	Sections 3, 4, 5, range 7, Chemainus district.	"	287	
3	Lyacksun	Near the northern end of Valdez island, Cedar district.	Lyacksun band	1,756	
4	Shingle Point	On west shore of Valdez island, Cedar district.	"	79	
5	Portier Pass	At the southern end of Valdez island, Cedar district.	"	5	
6	...	Eastern portion of section 6, range 8, Chemainus district.	Penelakut Band	33	Allotted by Joint Reserve Commission, January 18, 1877. Surveyed 1878.
7	Kuper Island	The whole of Kuper island, Chemainus district, with the exception of Mr. W. Conn's claim.	"	2,138	
8	Tent Island	Tent island, Chemainus district	"	85	
9	Fishing station	At Portier pass, on the northwest extremity of Galiano island, Chemainus district.	"	76	
10	Fishing station	On left bank of Chemainus river, Chemainus district, portions of sections 8, 9, range 7, 8.	Chemainus and Sicka-meen bands.	15	
11	...	Western portion of section 11, range 7, Chemainus district.	"	81	
12	...	On western shore of Oyster harbour, at its head, Oyster district.	Chemainus and Sicka-meen bands.	296	
13	...	Between Oyster harbour and Chemainus bay, Oyster district.	...	2,692	Allotted by Joint Reserve Commission, January 18, 1877. Surveyed 1878.
1	Comox	Section 4, Comox district, situated on the northern shore of Comox harbour.	Comox	155	

2	Pentledge	Comox district, on the left bank of the Pentledge river, at its confluence with the Tsolum river.		209	Allotted by Joint Reserve Commission, December 12, 1876. Surveyed 1878.
3	Grave-yard	Comox district, on Goose spit, Comox harbour		14	
1	Cowichan	Quamichan district, rge. 2, sec. 12, 13, 14	Cowichan		
		" " 3 " 12, 13, 14, 15, 16			
		" " 4 " 12, 13, 14, 15, 16	Quamichan, Coniaken, Clem-clem-a-lits, Hanutzen, Somenos, Koksailah, Kilpahlas and Kanipsin bands.		
		" " 5 " 12, 13, 14, 15, 16			
		" " 5 " E½ 17, E½ 18			
		" " 6 " 15, 16			
		" " 7 " W½, NE¼, 10			
		" " 7 " 11, 14			
		" " 8 " E¼ 8, E½ 9			
		" " 8 " E½, NW¼ 10			
		" " 8 " 11, 13–17		5,723	Allotted by Joint Reserve Commission, February 17, 1877. Surveyed 1878.
		Cowichan district, " 1 " 11 to 17			
		" " 2 " 12 to 16			
		" " 3 " 14pt of 15, 16			
		" " 4 " 15			
		" " 5 " E¼ 11, E½ 12, E½ 13, 14, 15			
		" " 6 " 11, 12, 13			
		" " 7 " 8 to 15			
		" " 8 " 8, 9, 10, 15			
2		" " 3 " 7		75	
3	Kil-pah-las	" " 5 " 6		51	
4		Shawnigan district, range 5, section 19		75	Allotted by Joint Reserve Commission, March 3, 1877.
5	Tzart-lam	Sahtlam district, on left bank Cowichan river.		16	Allotted by Joint Reserve Commission, February 17, 1877.
6	Kakalatza	Sahtlam district, on left bank Cowichan river.	Cowichan	24	
7	Skutz	Cowichan Lake district, on the left bank of Cowichan river, at Skutz canyon.		18	Allotted by Joint Reserve Commission, February 17, 1877. Surveyed, 1878.
8	"	Cowichan Lake district, on both banks of Cowichan river, at head of Skutz canyon.		40	
...	Cowichan Lake	Cowichan Lake district, on northern shore of Cowichan lake, near its outlet, and partly on section 5 and partly on Island railway land.	Cowichan Lake	130	Allotted by Commissioner O'Reilly, May 31, 1887. Surveyed 1890. One hundred and seven and a half acres of section 5 conveyed by Mr. C. Green to the Dominion Government, December 1888.
...	Esquimalt	Esquimalt district, on eastern shore of Esquimalt harbour.	Esquimalt	47	Held by an agreement made by the Hudson's Bay Company on behalf of the Crown, April 30, 1850. Reserve confirmed by the Joint Reserve Commission, May 4, 1878. Surveyed, 1886.
1	Nanaimo town	Nanaimo district, on Nanaimo harbour	Nanaimo	47	
2	" river	Cranberry district, on left bank of Nanaimo river.		128	Old reserves confirmed by Joint Reserve Commission, December 20, 1876. Surveyed, 1874 and 1878.
3	" "	Cranberry district, sections 19, 20, 21, range 7, and portion of section 21, range 6.		260	
4	" "	Sections 18 and 19, range 8, Cranberry district.		200	Allotted by Joint Reserve Commission, December 20, 1876. Surveyed, 1878.

Schedule of Indian Reserves in the Dominion—*Continued*

COWICHAN AGENCY, BRITISH COLUMBIA.—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
5	Fishing station	Nanaimo district, on southern shore of Gabriola island, part of section 1.		2½	Allotted by Joint Reserve Commission, December 23, 1876. Surveyed, 1878.
6	Burial-ground	Small island about 7 chains east of reserve No. 5.			Allotted by Joint Reserve Commission, December 23, 1876.
....	Nanoose	Nanoose district, on the southern shore of Nanoose harbour.	Nanoose	209	Allotted by Joint Reserve Commission, December 15, 1876.
....	Qualicum	Newcastle district, at the month of the Qualicum river.	Qualicum	197	Allotted by Joint Reserve Commission, December 13, 1876. Surveyed, 1878.
1	South Saanich	South Saanich district, sections 7, 8, 9, S., range 1 W., sections 7, 8, 9 S., range 2 W.	Saanich	483	Original reserves confirmed by Joint Reserve Commission, March 3, 1877. Surveyed, 1878.
2	East Saanich	South Saanich district, sections 6, 7, 8 S., range 4 E., sections 6, 7, 8 S., range 5 E., sections 6, 7, 8 S., range 6 E.	"	605	
3	Cole Bay	North Saanich district, sections 4, 5 N., range 1 W., sections 4, 5 N., range 2 W., sections 2, 3 N., range 1 W., sections 2, 3 N., range 2 W.	"	705	Old reserve confirmed by Joint Reserve Commission, March 3, 1877. Allotted by Joint Reserve Commission, March 3, 1877. Surveyed, 1878.
4	Union Bay	North Saanich district, section 15 N., range 1 W.	"	71	Old reserve confirmed by Joint Reserve Commission, March 3, 1877. Surveyed, 1878.
5	Fulford Harbour	Cowichan district, the southern portion of section 53, Saltspring island.	"	43	Allotted by Joint Reserve Commission, March 3, 1877. Surveyed, 1878.
6	Mayne Island	Cowichan district.	"	323	Allotted by Joint Reserve Commission, March 3, 1877. Surveyed, 1878.
7	Saturna Island	Cowichan district, at Deep cove, the eastern half of section 12 and west half section 13.	"	360	
8	Pender Island	Cowichan district, at Hay point, Pender island.	"	8	
9	Bare Island	Cowichan district, 5 miles east of Saanich.	"	26	
10	Senanus Island	Cowichan district, in Saanich inlet.	"	4	Allotted by Joint Reserve Commission, March 3, 1877. Surveyed, 1878.
11	Malahut	Malahut district, on west shore of Saanich inlet.	"	586	
12	Hatch Point	Shawnigan district, eastern portions of sections 11, 12, range 10.	"	92	
13	Goldstream	Goldstream district, at the mouth of Goldstream.	"	12	
1	Songhees	Esquimalt district, on western shore of Victoria harbour.	Songhees	112	Held by an agreement made by the Hudson's Bay Co. on behalf of the Crown, April 30, 1850. Confirmed by Joint Reserve Commission, May 1, 1878.

2	Deadman's or Halkett Island.	Victoria district, in Victoria harbour.	"	½	Allotted by Joint Reserve Commission, May 4, 1878.
3	Discovery Island	Cowichan district, the northern portion of Discovery island, 5 miles east of Victoria.	"	90	Reserved by Governor Douglas, June 10, 1863. Confirmed by Joint Reserve Commission, May 4, 1878. Surveyed.
4	Chatham Islands	Cowichan district, two islands about ⅛ mile northwest of reserve No. 3.	"	57	
1	Sooke	Sooke district, section 8, on left bank of Sooke river, at its mouth.	Sooke	65	Old reserve confirmed by Joint Reserve Commission, June 11, 1877.
2		Sooke district, section 16	"	101	Allotted by Joint Reserve Commission, June 11, 1877. Surveyed, 1878.
3	Grave-yard	Sooke district, part of section 7, Billings' spit.	"	¾	
4	"	Sooke district, part of section 73, on the right bank of Sooke river, at its mouth.	"	26/100	

FRASER AGENCY, BRITISH COLUMBIA.

1	Cheam	New Westminster district, in township 3, ranges 28 and 29, west 6th meridian, left bank of Fraser river.	Cheam	883	In railway belt. Allotted by Reserve Commissioner Sproat, June 16, 1879. Surveyed, 1881. Final confirmation, March 19, 1892.
2	Tse à tah	New Westminster district, in township 3, range 28, west 6th meridian, right bank of Fraser river.	"	390	
1	Schelowat	New Westminster district, in townships 2 and 3, range 29, west 6th meridian, on right bank of Hope slough.	Chilliwack, Skwah band.	213	In railway belt. Allotted by Reserve Commissioner Sproat, June 20, 1879. Surveyed 1881. Final confirmation, March 19, 1892.
2	Skwahla	New Westminster district, in township 3, range 30, west 6th meridian, on left bank of Hope slough.	" "	29	In railway belt. Allotted by Reserve Commissioner Sproat, May 15, 1879. Surveyed 1881. Final confirmation, March 19, 1892.
3	Skwali	New Westminster district, in township 3, range 30, west 6th meridian, on right bank of Hope slough, and left bank of Shelford slough.	" "	298	
4	Skwah	New Westminster district, in townships 2 and 3, range 30, west 6th meridian, on left bank of Hope slough at its mouth.	" "	313	
5	Skway	New Westminster district, in townships 2 and 3, range 30, west 6th meridian, on right bank of Chilliwack river at its mouth.	Skway band	538	
6	Kwaw-kwaw-a-pilt	New Westminster district, in township 23, east of coast meridian, on left bank of Kwaw-kwaw-a-pilt slough.	Chilliwack, Kwaw-kwaw-a-pilt band.	155	
7	Sqni-a-ala	New Westminster district, in township 23, east of coast meridian, on the right bank of Chilliwack river.	Squiala band	209	
8		New Westminster district, in township 23, east of coast meridian, on the left bank of Chilliwack river at its mouth.	"	115	In railway belt. Allotted by Reserve Commissioner Sproat, May, 1879. Surveyed 1881. Final confirmation, March 19, 1892.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

FRASER AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
9	Aitchelitch	New Westminster district, in township 23, east of coast meridian, on the left bank of Chilliwack river.	Ahtsalitz band	52	
10	Skul-kayn	New Westminster district, in township 26, east of coast meridian, on the right bank of the Chilliwack river.	Skul-kayn band	139	
11	"	New Westminster district, in township 26, east of coast meridian, on the left bank of the Chilliwack river.	"	30	In railway belt. Allotted by Reserve Commissioner Sproat, June 20, 1879. Surveyed, 1881. Final confirmation, March 19, 1892.
12	Ya-kwe-a-kwi-oose	New Westminster district, in township 26, east of coast meridian, on the right bank of the Chilliwack river.	Ya-kwe-a-kwi-oose	48	
13	Tzeachten	New Westminster district, in townships 23 and 26, east of coast meridian, on the banks of the Chilliwack and Luc-a-cue rivers.	Chilliwack, Skul-kayn and Ya-kwe-a-kwi-oose bands.	697	See Order in Council, Aug. 16, 1892. In railway belt. Allotted by Reserve Commisioner Sproat, June 20, 1879. Surveyed 1881.
14	Soowahlie	New Westminster district, in townships 22, 23, 25 and 26, east of coast meridian.	Soowali band	1,140	Final confirmation, March 19, 1892.
15	Grass reserve	New Westminster district, northwest ¼ section 22, township 26.	Chilliwack Indians in common.	160	In railway belt. Allotted by Reserve Commissioner Sproat, May 15, 1879.
16	Skumalasph	New Westminster district, in township 24, on the right bank of Fraser river.	Skwah, Skwahla, Kwaw-kwaw-a-pilt, Squiala, Skway and Aht-salitz bands in common.	1,158	Surveyed, 1881. Final confirmation, March 19, 1892.
1	Coquitlam	New Westminister district, in township 38, west of coast meridian, on the right bank of Coquitlam river.	Coquitlam	$6\frac{59}{100}$	In railway belt. Old reserves confirmed by Reserve Commissioner Sproat, July 8, 1879.
2		New Westminster district, in township 38, west of coast meridian, on the left bank of Coquitlam river.	"	$202\frac{59}{100}$	Surveyed 1881. Final confirmation, March 19, 1892.
1	Samahquam	New Westminster district, at the 24-mile post on the Douglas portage.	Douglas	249	Allotted by Commissioner O'Reilly, Sept. 7, 1881.
2	Sachteen	New Westminster district, near the 23-mile post on the Douglas portage, Two graves 200 yards north of the 23-mile post.	"	15	Surveyed, 1882. Final confirmation, May 1, 1886.
2A	"	To the south of and adjoining reserve No. 2.	"	52	Allotted by Commissioner O'Reilly, Sept. 30, 1897. Not surveyed. Acreage approximate only.

3	Sweeteen	New Westminster district, near the 21-mile post on the Douglas portage.	"	36	Allotted by Commissioner O'Reilly, Sept. 7, 1881. Surveyed, 1882. Final confirmation, May 1, 1886.
4	Skookum Chuck	New Westminster district, at the 19-mile post on the Douglas portage.	"	526	
5	Sklahhesten	New Westminster district, at the 14-mile post on the Douglas portage.	"	79	
5A	"	An addition to reserve No. 5.	"	150	Allotted by Commissioner O'Reilly, Sept. 30, 1897. Not surveyed. Acreage approximate only.
6	Lelachen	New Westminster district, on the right bank of the Lillooet river, about 3 miles from its mouth.	"	$37\frac{50}{100}$	Allotted by Commissioner O'Reilly, May 5, 1884. Surveyed, 1882. Final confirmation, May 1, 1886.
7	Grave-yard	New Westminster district, on the right bank of Lillooet river, ¾ mile below Lelachen.	"	$0\frac{75}{100}$	
8	Douglas	New Westminster district, at the head of Harrison lake, and at the mouth of the Lillooet river.	"	1,030	
9	Morteen	New Westminster district, at the 17-mile post on the Douglas portage.	"	82	Allotted by Commissioner O'Reilly, Sept. 30, 1897. Not surveyed. Acreage approximate only.
10	Franks	New Westminster district, at the 11-mile post on the Douglas portage.	"	82	
11	Perrets	New Westminster district, near the 10-mile post on the Douglas portage.		33	
1	Seowlitz	New Westminster district, in township 3, range 30, west of 6th meridian, at the mouth of Harrison river.	Harrison River	616	In railway belt. Allotted by Comm'r. O'Reilly, May 14, 1881.
2	Burial-ground	New Westminster district, in township 3, range 30, west of 6th meridian, on the right bank of Harrison river, at its mouth.	"	24	Surveyed, 1881. Final confirmation, May 1, 1886.
3	Squawkum Creek	New Westminster district, in township 24, east of coast meridian, on right bank of Harrison river, 3 miles from its mouth.	"	392	In railway belt. Allotted by Comm'r. O'Reilly, May 7, 1884. Surveyed, 1884. Final confirmation, May 1, 1886.
4	Chehalis	New Westminster district, in township 4, range 30, west of 6th meridian, on the right bank of Harrison river.	"	635	In railway belt. Allotted by Comm'r. O'Reilly, May 6, 1884. Surveyed, 1884. Final confirmation, May 1, 1886.
5	"	New Westminster district, in township 4, range 29-30, west of 6th meridian, on the right bank of Harrison river.	"	1,414	In railway belt. Allotted by Comm'r. O'Reilly, May 6, 1884. Surveyed, 1885. Final confirmation, May 1, 1886.
5A	"	New Westminster district, in township 4, range 30, west of 6th meridian, on the right bank of Harrison river, between reserves 4 and 5.	"	136	In railway belt. Added to Chehalis reserves by Order in Council, August 11, 1896.
6		New Westminster district, in township 4, range 29, on left bank of Harrison river.	"	63	In railway belt. Allotted by Comm'r. O'Reilly, May 6, 1884. Surveyed, 1884. Final confirmation, May 1, 1886.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

FRASER AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or band.	Area, Acres.	Remarks.
1	Homalco	Coast district, on right bank of Homalco river, at the head of Bute inlet.	Homalco	710·80	
2		Coast district, on left bank of Homalco river, about a mile from its mouth.	"	9·50	Allotted by Comm'r. O'Reilly, Aug. 10, 1888.
3	Potato Point	Coast district, at head of Bute inlet.	"		Surveyed, 1888.
4	Orford Bay	Coast district, on eastern shore of Bute inlet.	"	0·40	Final confirmation, April 28, 1891.
5	Mushkin	Coast district, on eastern shore of Valdez island.	"	671·30 10·50	
6	Aupe	Coast district, on eastern shore of Bute inlet.	"	14	
1	Hope	Yale district, in the town of Hope.	Hope	10·50	100 inches of water from Co-que-hal-la river, recorded Sept. 25, 1888.
2	Schkam	Yale district, on right bank of Fraser river, one mile above the town of Hope, township 5, range 26, west 6th meridian.	"	193	250 inches of water from Hza-wilt-san creek, Sept. 25, 1888. In railway belt.
3	Greenwood Island	Yale district, in section 9, township 5, range 26, west of 6th meridian.	"	10	Allotted by Comm'r. Sproat, Aug. 16, 1879. Surveyed, 1881.
1	Chawuthen	Yale district, in township 5, range 27, west of 6th meridian, on right bank of Fraser river, 3 miles below Hope.	"	1,387	Final confirmation, May 8, 1889.
....	Seabird Island	Yale and New Westminster districts, townships 3 and 4, range 28, west 6th meridian.	"	.....	Seabird island, containing 4,511·50 acres, was allotted by Commissioner Sproat on June 13, 1879, to the Hope, Popkum, Squawtits, Ohamil, Skawahlook, Union Bar and Yale Indians in common. Commissioner Sproat assigned to the Hope Indians (1) the right to fish in the Fraser river from a rock on lot 18, group 1, Yale district, the property of Rev. A. D. Pringle; (2) also from a rock on the right bank of Fraser river, opposite the Hope town reserve; (3) also from a rock on the right bank of Fraser river, 12 chains above Schkam reserve; (4) also from a rock on the right bank of the Fraser river opposite Maria island.
1	Katzie	New Westminster district, in section 10, township 9, east of coast meridian, on right bank of Fraser river.	Katzie	109	In railway belt.
2		New Westminster district, in section 11, township 9, east of coast meridian, on left bank of Fraser river.	"	57	Allotted by Comm'r. Sproat, July 3, 1879. Surveyed, 1880 and 1898.

3	Barnstown Island	New Westminster district, the northeast ¼, section 4, township 9, east of coast meridian, on right bank of Parson's channel, Fraser river.	"	135	In railway belt. Allotted by Comm'r. O'Reilly, Sept. 15, 1898.
4	Pitt Lake	New Westminster district, in sections 3 and 4, township 5, west of 7th meridian, at the outlet of Pitt lake.	"	540	Surveyed, 1898 and 1900.
5	Grave-yard	New Westminster district, the northwest corner of lot 279, group 1.	"	1	In railway belt. Purchased by the Dominion government from Mr. John Hammond, Dec. 1, 1898. Surveyed, 1899.
1	Klahoose	Coast district, at the head of Toba inlet.	Klahoose	2,280	
2	Burial-ground	Coast district, on western shore of Toba inlet, about a mile west of reserve No. 1.	"	0·75	
3	Salmon Bay	Coast district, at the head of Salmon bay, Toba inlet.	"	174	
4	Siakin	New Westminster district, on eastern shore of Waddington channel, near Dean point.	"	7	Allotted by Comm'r. O'Reilly, August 12, 1888.
5	Deep Valley	Coast district, on eastern shore of Ramsey arm.	"	61	Surveyed, 1888. Final confirmation, May 18, 1889.
6	Quequa	New Westminster district, on eastern shore of Lewis channel.	"	4	
7	Tork	Sayward district, on western shore of Squirrel cove, Cortes island.	"	698	
8		Sayward district, on northern shore of Squirrel cove, Cortes island.	"	39	
9	Ahpocum	New Westminster district, at the head of Forbes bay, Homfray channel.	"	62	
10	Tatpo-oose	Sayward district, at the head of Hoskyn inlet, Valdez island.	"	29	Allotted by Comm'r Vowell, June 25, 1900. Surveyed, 1900.
1	Whonock	New Westminster district, in townships 14, 15, east of coast meridian, on the right bank of Fraser river.	Langley	92	
2		New Westminster district, the northwest ¼ section 3, township 15, east of coast meridian, on right bank of Stave river.	"	127	
3		New Westminster district, lots 444 and 445, group 1, townships 14, 15, east of coast meridian, on left bank of Stave river at its mouth.	"	122	
4		New Westminster district, in section 2, township 15, east of coast meridian, on left bank of Stave river.	"	239	In railway belt. Allotted by Comm'r Sproat, June 27, 1879. Surveyed, 1880, 1881. Final confirmation, June 24, 1887.
5		New Westminster district, in townships 11 and 12, east of coast meridian, on right bank of Fraser river.	"	360·50	
6	McMillan's Island	New Westminster district, in townships 11, 12, east of coast meridian, in Fraser river, near Langley.	"	447	
7		New Westminster district, part of section 21, block 5 north, range 2 west.	"	40	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

FRASER AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
8	.....	New Westminster district, part of lot 1, group 2, on left bank of the Fraser, opposite New Westminster.	Langley	4·68	1·29 acres of this reserve was acquired by Order in Council, May 16, 1899.
1	Sahhaeum	New Westminster district, part of section 34, township 16, east of coast meridian.	Matsqui	52·50	In railway belt.
	Matsqui Main reserve.....	New Westminster district, part of section 7, township 17, east of coast meridian.	. . . . .	353·85	Allotted by Comm'r Sproat, June 20, 1879. Surveyed, 1881.
3	Three Islands.....	New Westminster district, in Fraser river, north of reserve No. 2.	"	608·50	Final confirmation, March 19, 1892.
4	Matsqui...	New Westminster district, part of section 6, township 13, east of coast meridian.	"	60	
1	.....	New Westminster district, part of lots 1 and 2, group 2, on left bank of Fraser river, opposite New Westminster.	Musqueam.....	5·16	1 acre of this reserve was acquired by Order in Council, May 16, 1899. 1·13 acres purchased from Mr. Justice Bole, June 17, 1897.
2	Musqueam.....	New Westminster district, on the right bank of the north arm of Fraser river at its mouth.	"	392·50	Allotted by Comm'r Sproat, June 30, 1879. Surveyed, 1881 and 1897. Final confirmation, March 19, 1892.
3	Sea Island.....	New Westminster district, lots 8 and 9, Sea island, on the left bank of the north arm of Fraser river at its mouth.	"	60·75	
....	New Westminster...	New Westminster district. Three blocks in the City of New Westminster.	New Westminster.....	$22\frac{48}{100}$	Allotted by Comm'r Sproat, June 30, 1879.
....	Poplar Island.....	New Westminster district, in north arm of Fraser river opposite New Westminster.	"	$27\frac{1}{10}$	Surveyed, 1881.
1	Ohamil.	Yale district, in township 4, range 27, west of 6th meridian, on left bank of Fraser river opposite Ruby creek.	Ohamil.....	458	In railway belt.
2	Wahleach Island.....	Yale district, in Fraser river west of reserve No. 1.	"	171	Allotted by Comm'r Sproat, June 12, 1879. Surveyed, 1881.
	Seabird Island.....	Yale and New Westminster districts, townships 3 and 4, range 28, west 6th meridian.	"	.....	Seabird island, containing $4,511\frac{50}{100}$ acres, was allotted by Comm'r Sproat on June 13, 1879, to the Ohamil, Popkum, Squawtits, Skawahlook, Hope, Union Bar, and Yale Indians in common.
1	Pemberton	Lillooet district, at the upper end of the lower Pemberton meadows.	Pemberton.....	$188\frac{50}{100}$	
2	....	Lillooet district, on the upper Pemberton meadows, between the Lillooet and Squamish rivers.	"	105	
3	....	Lillooet district, on the lower Pemberton	"	$909\frac{50}{100}$	Allotted by Comm'r O'Reilly, Sept. 6, 1881. Surveyed, 1882. Final confirmation, June 4, 1884.

		meadows between the north and south branches of the Lillooet river.			
4	Lokla	Lillooet district, on the Birkenhead river, about seven miles from reserve No. 1.	"	$19\frac{5.0}{100}$	
5	Grave-yard	Lillooet district, near the 29 mile house at the foot of Pemberton lake, on Mr. Joseph Smith's pre-emption claim.	"	$1\frac{4.0}{100}$	Allotted by Comm'r O'Reilly, Sept. 6, 1881. Surveyed, 1882. Final confirmation, June 4, 1884. The exclusive right of fishing in the Lillooet river from the foot of Pemberton lake $\frac{1}{2}$ mile down stream is reserved for these Indians.
	Popkum	Yale district in township 3, range 28, west of 6th meridian, on the left bank of Fraser river.	Popkum	381	In railway belt. Old reserve confirmed by Comm'r Sproat, June 16, 1879. Surveyed 1880. Final confirmation, March 19, 1892
	Seabird Island	Yale and New Westminster districts, townships 3 and 4, range 28, west of 6th meridian.	"		Seabird island, containing $4,511\frac{5.0}{100}$ acres, was allotted by Comm'r Sproat on June 13, 1879, to the Popkum, Squawtits, Ohamil, Skawahlook, Hope, Union Bar and Yale Indians in common.
	Semiahmoo	New Westminster district, sections 1 and 2, township 1, west of coast meridian, on Semiahmoo bay, on the international boundary line.	Semiahmoo	392	Allotted by Comm'r. O'Reilly, June 14, 1887. Surveyed, 1890. Final confirmation, March 26, 1892.
1	Tsawcome	New Westminster district, in Trail bay, $1\frac{1}{2}$ mile north of White island.	Seshelt	$45\frac{5.5}{100}$	
2	Seshelt	New Westminster district, between Trail bay and Porpoise bay, Jervis inlet.	"	607	
3	Sway-calse	New Westminster district, on western shore of Porpoise bay, Jervis inlet.	"	$11\frac{2.6}{100}$	
4	Oalthkyim	New Westminster district, on western shore of Porpoise bay, Jervis inlet.	"	$8\frac{9.0}{100}$	
5	Khalth	New Westminster district, on eastern shore of Porpoise bay, Jervis inlet.	"	$3\frac{4.4}{100}$	Allotted by Joint Reserve Commission, December 7, 1876.
6	Klayekwim	New Westminster district, on eastern shore of Narrows arm, Jervis inlet.	"	$2\frac{4.6}{100}$	Surveyed, 1881.
7	"	New Westminster district, on western shore of Narrows arm, Jervis inlet.	"	53	
8	"	New Westminster district, at the head of Narrows arm, Jervis inlet.	"	196	
9	Chickwat	New Westminster district, on the right bank of the Tzoonye river, about three miles above reserve No. 8.	"	5	
10	Tchalchelailthtenum	New Westminster district, east of Boulder island, Seshelt inlet, Jervis inlet.	"	19·10	
11	Hunacchin	New Westminster district, at the head of Queen's reach, Jervis inlet.	"	260·50	
12	Swaywelat	New Westminster district, on the western side of the entrance to Princess Louise inlet, Jervis inlet.	"	1·10	
13	Chelohsin	New Westminster district, on the northern shore of Queen's reach, Jervis inlet.	"	3·33	
14	Paykulkun	New Westminster district, on the northern shore of Queen's reach, Jervis inlet.	"	4·55	

SCHEDULE of Indian Reserves in the Dominion—*Continued.*

FRASER AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
15	Tsooahdie	New Westminster district, at Deserted bay, Jervis inlet.	Seshelt	724·50	
16	Slayathlum	New Westminster district, on the western shore of Jervis inlet, at the head of Prince of Wales reach.	"	15·85	Allotted by Joint Reserve Commission, December 7, 1876. Surveyed, 1881.
17	Skwawkweehm	New Westminster district, at the head of Vancouver bay, Jervis inlet.	"	13·20	
18	Smeshalin	New Westminster district, near the north-east corner of Pender harbour, Malaspina strait.	"	10	
19	Suahbin	New Westminster district, at Garden bay, Pender harbour, Malaspina strait.	"	6·50	
....	Grave-yard	On Garden bay, ten chains east of reserve 19.	"	0·35	
20	Sallahlus No. 1	New Westminster district, in Pender harbour, opposite Gerran's bay.	"	3·40	
....	" No. 2	On Gerran's bay, Pender harbour.	"	1	
21	Sekaleton	New Westminster district, a rocky island in Pender harbour, Malaspina strait.	"	1·25	
22	Sanghanaught	New Westminster district, on the eastern shore of Agamemnon channel, one mile north of Norman point.	"	35	Allotted by Commr. Vowell, June 22, 1900. Not surveyed. Acreage approximate.
23	Cokquenects	New Westminster district, at the mouth of Eagle creek, on north shore of Malaspina strait.	"	80	
1	Skawahlook	Yale district, in sections 4 and 5, township 5, range 27, west of 6th meridian, on right bank of Fraser river.	Skawahlook	151	In railway belt. Allotted by Commr. Sproat, June 13, 1879.
2	Ruby Creek	Yale district, in section 5, township 5, range 27, west of 6th meridian, on left bank of Luksectsissum or Ruby creek.	"	45·50	Surveyed, 1881.
....	Seabird Island	Yale and New Westminster districts, townships 3 and 4, range 28, west of 6th meridian.	"	.....	Seabird island, containing 4,511·50 acres, was allotted by Commr. Sproat on June 13, 1879, to the Skawahlook, Popkum, Squawtits, Ohamil, Hope, Union Bar and Yale Indians in common.
1	Mission	New Westminster district, on north shore of Burrard inlet.	Squamish	38	
2	Seymour Creek	New Westminster district, on north shore of Burrard inlet, at the Second narrows.	"	147	Allotted by Joint Reserve Commission, June 15, 1877.

3	.. ....	New Westminster district, on north shore of Burrard inlet, near the north arm.	"	275	Surveyed, 1880.
4	Inlailawatash.	New Westminster district, at the head of the north arm, Burrard inlet.	"	33	
5	Kapilano..... ...	New Westminster district, on northern shore of Burrard inlet at the First narrows.	"	444	Boundaries of this reserve finally amended and confirmed May 22, 1893.
6	False Creek.....	New Westminster district, on southern shore of False creek at its mouth.	"	69·48	Allotted by Joint Reserve Commission, June 15, 1877. Surveyed, 1880.
7	Skowishin	New Westminster district, on the left bank of the Squamish river, twenty-five miles from its mouth.	"	100	
8	Chuckchuck	New Westminster district, on the right bank of the Squamish river, three miles above reserve No. 7.	"	0·15	
9	Poyam.....	New Westminster district, on the left bank of the Squamish river, seven miles above reserve No. 7.	"	0·67	
10	Skowishin grave-yard.	New Westminster district, on the left bank of the Squamish river, two miles below reserve No. 7.	"	·10	Allotted by Joint Reserve Commission, November 27, 1876. Surveyed, 1881.
11	Cheakamus.....	New Westminster district, on the left bank of the Squamish river, between Chemai creek and Cheakamus river.	"	4,046·50	
12	Yookwitz.	New Westminster district, on the right bank of the Squamish river, opposite the mouth of Cheakamus river.	"	23	
13	Poquiosin and Skamain....	New Westminster district, on the left bank of the Squamish river, near the mouth of Cheakamus river.	"	111·80	
14	Waiwakum.	New Westminster district, on the left bank of Squamish river.	"	37	
15	Aikwucks	New Westminster district, on the right bank of Squamish river.	"	27·45	
16	Seaichem.	New Westminster district, on the left bank of Kowtain slough, Squamish river.	"	68	
17	Kowtain..... ...	New Westminster district, on the left bank of Kowtain slough, Squamish river.	"	57·50	
18	Yekwaupsum.....	New Westminster district, on the left bank of Squamish river, one and a half miles from its mouth.	"	154	
19	" burial-ground. .	New Westminster district, one and a half miles north of Yekwaupsum.	"	2·25	Allotted by Joint Reserve Commission, November 27, 1876. Surveyed, 1881.
20	Mamaquum Island..... ..	New Westminster district, an island in the eastern branch of Squamish river.	"	13	
21	Squamish Island..... .	New Westminster district, the northern portion of Squamish island, at the mouth of the Squamish river.	"	416·50	
22	Skwulwailem.....	New Westminster district, at the mouth of the Squamish river, at head of Howe sound.	"	188·23	

SCHEDULE of Indian Reserves in the Dominion.—*Continued*

FRASER AGENCY, BRITISH COLUMBIA.—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
23	Ahtsann	New Westminster district, on the western branch of the Squamish river, at its mouth.	Squamish	229·20	Allotted by Joint Reserve Commission, November 27, 1876. Surveyed, 1881.
24	Stawamus	New Westminster district, on the eastern shore of Howe sound, at its head.	"	141·50	
25	Kaikalahun	New Westminster district, on the western shore of Howe sound, opposite Woolridge island.	"	33	
26	Chekwelp	New Westminster district, on the western shore of Howe sound, opposite Keats island.	"	34·50	Allotted by Joint Reserve Commission, November 28, 1876. Surveyed, 1881.
27	" burial-ground	New Westminster district, the most northern of the Shelter islands, Howe sound.	"	0·50	
28	Defence Island	New Westminster, district, Howe sound		33	
1	Sliammon	New Westminster district, on northern shore of Malaspina strait, east of Harwood island.	Sliammon	1,924·50	
2	Harwood Island	New Westminster district, in the strait of Georgia.	"	2,095	Allotted by Commissioner O'Reilly, August 6, 1888. Surveyed, 1888.
3	Paukeanum	Sayward district, in Smelt bay, Cortes island.	"	200	Final confirmation, April, 28, 1891.
4	Toquana	New Westminster district, at the head of Theodosia arm, Malaspina inlet.	"	395·50	
5	Tokenatch	New Westminster district, at the head of Freke's anchorage, Malaspina inlet.	"	53	Allotted by Commissioner O'Reilly, August 6, 1888. Surveyed, 1888. Final confirmation, April 28, 1891.
6	Kahkaykay	New Westminster district, on Gifford peninsula, Malaspina inlet.	"	45	
1	Squawtits	Yale district, in section 13, township 4, range 28, west of the 6th meridian, on left bank of Fraser river, opposite the head of Seabird island.	Squawtits	335·50	In railway belt. Allotted by Commissioner Sproat, June 13, 1879. Surveyed, 1881.
2		Yale district, in section 24, township 4, range 28, west of 6th meridian, north of and adjoining reserve No. 1.	"	98	
....	Seabird Island	Yale and New Westminster districts, townships 3 and 4, range 28, west of 6th meridian.	....	.....	Seabird island, containing 4,511·50 acres, was allotted by Commissioner Sproat on June 13, 1879, to the Squawtits, Popkum, Ohamil, Skawahlook, Hope, Union Bar, and Yale Indians in common.
1	Yaalstrick	New Westminster district, in sections 28, 29,	Sumass	283·90	

		32 and 33, township 23, east of coast meridian. An island in Fraser river.			
2	Lackaway	New Westminster district, in NE ¼, section 20, township 23, east of coast meridian, on left bank of Fraser river, near Miller's landing.	"	39	
3	Timber reserve	New Westminster district, in SW ¼, section 28, township 23, east of coast meridian.	"	10	
4	Papekwatchin	New Westminster district, in township 20, east of coast meridian, on right bank of Fraser river.	"	235	In railway belt. Allotted by Commissioner Sproat, May 15, 1879. Surveyed, 1881. Final confirmation, March 19, 1892.
5	Aylechootlook	New Westminster district, in section 13 township 20, east of coast meridian, on the right bank of Sumass river.	"	49	
6	Upper Sumass	New Westminster district, in township 19, east of coast meridian, on the banks of Sumass river, above Sumass lake.	"	610·80	
7	Sumass	New Westminster district, the NW ¼, section 6, township 19, east of coast meridian, on the banks of Sumass river.	"	160	
8	Holachten	New Westminster district, in township 24, east of coast meridian, on right bank of Nicomen slough.	Sumass (Lakahahmen band.)	300	
9	Timber reserve	New Westminster district, in section 4, township 24, east of coast meridian.	" "	59	In railway belt. Allotted by Commissioner Sproat, June 26, 1879. Surveyed, 1881. Final confirmation, March 19, 1892.
10	Skwealm	New Westminster district, in townships 23, 24, east of coast meridian, Nicomen slough.	" "	183	
11	Lakahahmen	New Westminster district, in section 6, township 24, east of coast meridian, on right bank of Nicomen slough.	" "	94·10	
....	Tsawwassen	New Westminster district, in township 5, on the gulf of Georgia, one mile north of the international boundary line.	Tsawwassen	604·25	Allotted by Commissioner Sproat, December 28, 1878. Surveyed, 1881. Final confirmation, March 19, 1892.
1	Yale Town	Yale district, in section 14, township 7, range 26, west of 6th meridian.	Yale	17·50	Allotted by Comm'r. O'Reilly, May 23, 1881. 20 inches of water from Yale creek recorded Sept. 25, 1888.
2	4½ Mile reserve	Yale district, in section 24, township 7, range 26, west of 6th meridian, on right bank of Fraser river, 4½ miles above Yale.	"	15	Allotted by Comm'r. Sproat, August 5, 1879. 15 inches of water from the stream on the reserve and all the water from other sources on the reserve recorded Sept. 25, 1888.
3	Kuthlalth	Yale district, in section 13, township 7, range 26, west of 6th meridian, on left bank of Fraser river, ¾ mile above Yale.	"	362	Allotted by Comm'r. Sproat, August 5, 1879. Foreshore added to this reserve by Order in Council, August 9, 1909; 20 inches of water recorded Sept. 25, 1888.
4	Qualark	Yale district, in township 6, range 26, west of 6th meridian, on left bank of Fraser river, three miles below Yale.	"	27	Allotted by Comm'r. O'Reilly, May 23, 1881. In railway belt. Surveyed, 1882-84. Final confirmation, May 1, 1886.
5	Albert Flat	Yale district, in townships 6, 7, range 26, west of 6th meridian, on right bank of Fraser river, three miles below Yale.	"	150	Allotted by Comm'r. Sproat, August 5, 1879. 100 inches of water from Gordon creek, and all the water from other sources on the reserve recorded Sept. 25, 1888.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

FRASER AGENCY, BRITISH COLUMBIA—*Concluded.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
6	Squeah	Yale district, in township 6, range 26, west of 6th meridian, on left bank of Fraser, five miles below Yale.	Yale	46	Allotted by Comm'r. O'Reilly, May 23, 1881. 25 inches of water from Squeah creek recorded Sept. 25, 1888.
7	Kaykaip	Yale district, in township 6, range 26, west of 6th meridian, on left bank of Fraser river, 5½ miles below Yale.	"	31	Allotted by Comm'r. O'Reilly, May 23, 1881. 20 inches of water from Kaykaip creek recorded Sept. 25, 1888.
8	Stullawheets	Yale district, in township 6, range 26, west of 6th meridian, on right bank of Fraser river.	"	134·50	Allotted by Comm'r. Sproat, August 5, 1879. 50 inches of water from Stullawheets creek recorded Sept. 25, 1888.
9	Luksectsis-sum	Yale district, in townships 4, 5, range 27, west of 6th meridian, at mouth of Ruby creek.	"	157	In railway belt. Allotted by Comm'r. Sproat, August 5, 1879. Surveyed 1882-84. Final confirmation, May 1, 1886.
10	Skawahlum	Yale district, in township 6, range 26, west of 6th meridian, on right bank of Fraser river.	" Union Bar band	14·80	20 inches of water from Skawayluk creek recorded Sept. 25, 1888.
11	Puckatholetchin	Yale district, in townships 5, 6, range 26, west of 6th meridian, on right bank of Fraser river, five miles above Hope.	" "	566·50	150 inches of water from American Bar creek recorded Sept. 25, 1888.
12	Klaklaeum	Yale district, in township 5, range 26, west of 6th meridian, on right bank of Fraser river, three miles above Hope.	" "	71·75	20 inches of water from American Bar creek recorded Sept. 25, 1888.
13	Trafalgar Flat	Yale district, in township 5, range 26, west of 6th meridian, on left bank of Fraser river, 2½ miles above Hope.	" "	172	In railway belt. Allotted by Comm'r. Sproat, August 12, 1879. Surveyed, 1881.
14	Timber reserve	Yale district, in township 5, range 26, west of 6th meridian, on left bank of Fraser river, three miles above Hope.	" "	224·20	200 inches of water from Hamlin's creek recorded Sept. 25, 1888, for use on reserve No. 13.
15	Aywawwis	Yale district, in township 5, range 26, west of 6th meridian, on left bank of the Fraser river, at the mouth of Coquehalle river.	" "	229·40	
16	Kawkawa	Yale district, in section 14, township 5, range 26, west of 6th meridian, on eastern shore of Kawkawa lake.	" "	16	10 inches of water from the stream which flows through the land, and all water from other sources on the reserve recorded Sept. 25, 1888.
....	Seabird Island	Yale and New Westminster districts, townships 3 and 4, range 28, west of 6th meridian.	" "	....	Seabird island, containing 4,511·50 acres, was allotted by Comm'r. Sproat on June 13, 1879, to the Yale, Union Bar, Popkum, Squawtits, Ohamil, Skawahlook and Hope Indians in common.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS-OKANAGAN AGENCY, BRITISH COLUMBIA.

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	Hustalen	Kamloops division of Yale district, at the foot of Adams lake on its left bank.	Adams Lake, Sahhaltkum band.	2,178	100 inches of water recorded from East creek and all the water from the other sources of water supply on the reserve.
2	Squaam	Kamloops division of Yale district, on the western shore of Adams lake in Agate bay.	"	80	10 inches of water recorded from Pass creek.
3	Toops	Kamloops division of Yale district, at the foot of Adams lake on its right bank.	"	25	10 inches of water recorded from the nearest creek northward from the reserve.
4	Sahhahltkum	Kamloops division of Yale district, on the right bank of Thompson river, at the foot of Little Shuswap lake, in township 21, range 13, west of the 6th meridian.	"	3,206	100 inches of water recorded from the creek which flows along the western boundary of the reserve into Neskainlith lake; 250 inches of water from Neskainlith lake; 50 inches from the lake on the high hills westward from the foot of Little Shuswap lake.
4A	"	Kamloops division of Yale district, on the right bank of Thompson river.	"	334	Reserved by Dominion Order in Council of Sept. 30, 1895.
5	Stequmwhulpa	Kamloops division of Yale district, on the southern shore of Little Shuswap lake.	"	250	The Adams lake reserves are in the railway belt. They were allotted by the Joint Reserve Commission, August 13, 1877. Surveyed in 1878 and 1884. Final confirmation of reserves 1, 2, 3 and 5, May 7, 1887.
6&7	Switsemalph	Kamloops division of Yale district, the northern and southern portions of Switsemalph reserve on Salmon arm of Shuswap lake, in township 20, range 10, west of 6th meridian.	"	790 325	Two reserves on the Salmon arm were allotted by the Joint Reserve Commission to the Neskainlith, Adams lake and little Shuswap lake tribes in common. They have since been divided by the Indian agent among the several bands interested.
1	Cheetsum's Farm	Kamloops division of Yale district, in township 20, range 24, west of 6th meridian.	Ashcroft.	770	30 inches of water recorded from the lower part of Minnaberiet creek, and 20 inches from the spring near Cheetsum's house, and from all other sources of water-supply on the reserve.
2	105 Mile Post	Kamloops division of Yale district, in township 20, ranges 24 and 25, west of 6th meridian.	"	3,470	20 inches of water recorded from a spring on the reserve; 200 inches from the Bonaparte river and all the water from all other sources of water-supply on the reserve.
3	McLean's Lake	Kamloops division of Yale district, in township 21, range 25, west of 6th meridian.	"	1,003	25 inches of water recorded from the stream flowing into McLean's lake. All these reserves are in the railway belt. Allotted by Commissioner O'Reilly, August 10, 1881. Surveyed in 1885. Final confirmation, May, 1, 1886.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS OKANAGAN AGENCY, BRITISH COLUMBIA *Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
4	.....	Kamloops division of Yale district, lot 446 and portion of lot 17, Group 1.	Ashcroft.....	307	Exchanged by Messrs. Cornwall Bros., for Southdown mountain. See Order in Council, October 10, 1891. The Ashcroft Indians have the privilege of fishing on both banks of the Thompson river from the head of the Black canyon up stream a distance of one mile; also the privilege of fishing on both banks of the Thompson river from the mouth of Minnaberiets creek, up stream a distance of one-half mile.
1	Bonaparte.....	Kamloops division of Yale district, portions of sections 34, 35, tp. 21, R. 25, west of 6th meridian, and sections 2, 3, tp. 22, R. 25, west of the 6th meridian.	Bonaparte.....	477	100 inches of water recorded from the Bonaparte river and 50 inches from Hat creek.
2	Marvais Rocher.....	Kamloops division of Yale district, on Thompson river, in section 14, tp. 21, R. 23, west of 6th meridian.	"	99·80	30 inches of water recorded from Knife creek, and all the water from all other sources of water-supply on the reserve.
3	Loon Lake.....	Lillooet district, at the western extremity of Loon lake, 25 miles north of Ashcroft.	"	59	Allotted by Commissioner Sproat, August 10, 1878, surveyed 1883, final confirmation, June 4, 1884.
4	Upper Hat Creek.....	Lillooet district, portions of sections 19, 20, 29, 30, 31, 32 and 33, tp. 21, R. 26, west of 6th meridian.	"	2,057	100 inches of water recorded from the stream which discharges into Hat creek, opposite the Marble canyon, 150 inches from Hat creek, and all the water from all other sources of water-supply on the reserve.
5	Lower Hat Creek.....	Lillooet district, portions of sections 17, 18, 19, 20, tp. 22, R. 25, and sections 13, 14, 15, 22, 23, 24, tp. 22, R. 26, west of 6th meridian.	"	2,078	100 inches of water recorded from Sultatkua creek, 150 inches from Hat creek, and all the water from all other sources of water-supply on the reserve.
1A	Bonaparte	Kamloops division of Yale district, portions of sections 33, 34, 35, tp. 21, R. 25, and sections 1 and 2, tp. 22, R. 25, west of 6th meridian	"	1,343	Allotted by Commissioner O'Reilly, June 5, 1890. Not surveyed. With the exception of reserve No. 3, Loon lake, all the Bonaparte reserves are within the railway belt. Reserves 1, 2 and 3, allotted by Commissioner Sproat, August 10, 1878, surveyed 1883. Reserves 4 and 5, allotted by Commissioner O'Reilly, August 6, 1881, surveyed, 1883.
1	Tsawawnuck.....	Yale district, on the left bank of Fraser river, at the mouth of Ainslie creek, 32 miles above Yale.	Boothroyd, Chomok band	47½	40 inches of water recorded from Ainslie creek, and all the water from all other sources of water-supply on the reserve.

2	Tsintahktl	Yale district, on the left bank of Fraser river, 33 miles above Yale.	Boothroyd, Chomok band	37
3	Speyum	Yale district, on the right bank of Fraser river, opposite reserve No. 1, 32 miles above Yale.	"	374½
4	Kahmoose	Yale district, on the left bank of the Fraser river, 34 miles above Yale, in sec. 4, tp. 12, R. 26, west of 6th meridian.	"	60
5	Sho ook	Yale district, between the 35 and 36 mile posts, on the road from Yale, in tp. 12, R. 26, west of 6th meridian.	"	113
6	Inkahtsaph	Yale district, on the left bank of the Fraser river, 38 miles from Yale, in tp. 12, R. 26, west of 6th meridian.	"	454
7	Chukcheetso	Yale district, on the right bank of the Fraser river, opposite Inkahtsaph reserve.	Boothroyd	44½
8	Staiyahanny	Yale district, on the left bank of the Fraser river, 42½ miles above Yale.	"	74½
9	Stlakament	Yale district, to the west of the Fraser river, opposite reserve No. 8.	"	40
10	Dufferin reserve	Yale district, on the left bank of the Fraser river, in sec. 11, tp. 14, R. 27, west of 6th meridian.	"	15½
					All the Boothroyd reserves are within the railway belt. They were allotted by Commissioner Sproat, June 8, 1878. Surveyed 1885. Final confirmation, June 24, 1887.
1	Tuckkwiowhum	Yale district, on the left bank of the Fraser river, at the mouth of Anderson river, 24 miles above Yale, township 10, range 26, west 6th meridian.	Boston Bar	95
2	Kopchitchin	Yale district, on the right bank of the Fraser, at North Bend, 2 miles above Boston Bar, township 10, range 26, west 6th meridian.	"	359
3	Austin's Flat	Yale district, on the left bank of the Fraser, near Hell's Gate, 19 miles above Yale, on section 34, township 9, range 26, west 6th meridian.	"	3¼
4	Bucktum	Yale district, on the left bank of the Fraser, at Butcher's Flat, section 14, township 11, range 26, west 6th meridian, six miles above Boston Bar.	"	64

15 inches of water recorded from Jamieson creek, and all the water from all other sources of water-supply on the reserve.
50 inches of water recorded from Speyum creek; 50 inches from Nepopulchin creek, and all the water from all other sources of water-supply on the reserve.
10 inches of water recorded from Jamieson creek, and all the water from all other sources of water-supply on the reserve.
200 inches of water recorded from Nkatsam creek, and all the water from all other sources of water-supply on the reserve.
150 inches of water recorded from Nkatsam creek, 50 inches from the creek at the north end of the reserve, and all the water from all other sources of water supply on the reserve.
100 inches of water recorded from Chukcheetso creek, and all the water from all other sources of water supply on the reserve.
50 inches of water from Cheuhcheuh creek, and all the spare water from 42 Mile creek, and all the water from all other sources of water-supply on the reserve.
40 inches of water recorded from Stlakament creek, and all the water from all other sources of water supply on the reserve.
20 inches of water recorded from Cheuhcheuh creek, and all the water from all other sources of water supply on the reserve.
100 inches of water recorded from Anderson river, 20 inches from Ryan creek and all the water from all other sources of water-supply on the reserve.
50 inches of water recorded from the creek at North Bend; 100 inches from the creek in the middle of the reserve; 100 inches from the creek at the south end of the reserve.
10 inches of water recorded from the first creek below the reserve, and all the water from all other sources of water-supply on the reserve.
100 inches of water recorded from the creek on the reserve and all the water from all other sources of water-supply on the reserve.

Schedule of Indian Reserves in the Dominion—*Continued*

KAMLOOPS OKANAGAN AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or band.	Area, Acres.	Remarks.
5	Scaucy	Yale district, on the right bank of the Fraser, and right bank of Scaucy creek, 3 miles below Boston Bar, section 10, township 10, range 26, west 6th meridian.	Boston Bar	18	50 inches of water recorded from Scaucy creek, and all the water from all other sources of water-supply on the reserve.
6	Paul's	Yale district, on the right bank of the Fraser, one mile above Hell's Gate, in section 10, township 10, range 26, west 6th meridian.	"	1¼	5 inches of water recorded from Scaucy creek, and all the water from all other sources of water-supply on the reserve.
7	Shrypttahooks	Yale district, on the right bank of the Fraser, two miles below Boston Bar, in section 14, township 10, range 26, west 6th meridian.	"	87	100 inches of water recorded from Scaucy creek, and all the water from all other sources of water-supply on the reserve. The Boston Bar reserves are within the railway belt, they were allotted by Comm'r. Sproat, June 1, 1878; surveyed in 1882 and 1885, and finally confirmed, June 24, 1887.
1	Kinncheen	Kamloops division of Yale district, on the left bank of the Thompson at the mouth of Nicola river, in section 12, township 17, range 25, west 6th meridian.	Cook's Ferry	21¾	30 inches of water recorded from Nicola river.
2	Skoonkoon	Kamloops division of Yale district, on the right bank of the Thompson river, 5 miles below Spence's bridge, in section 17, township 16, range 25, west 6th meridian.	"	55	50 inches of water recorded from Skoonkoon creek, and all the water from all other sources of water supply on the reserve.
3	Shawniken	Kamloops division of Yale district, on the right bank of Thompson river, one mile below Spence's bridge, in sections 4 and 10, township 17, range 25, west 6th meridian.	"	106½	50 inches of water recorded from Shawniken creek, at the falls, and all the water from all other sources of water-supply on the reserve.
4		Kamloops division of Yale district, on the left bank of the Thompson river, ½ mile below Spence's bridge, in section 10, township 17, range 25, west 6th meridian.	"	35	10 inches of water recorded from the Thompson river.
4A		Kamloops division of Yale district, on the left bank of the Thompson river, to the south of and adjoining reserve No. 4.	"	108	Allotted by Commissioner O'Reilly, October 15, 1889. Unsurveyed.
5	Chuchhriaschin	Kamloops division of Yale district, in the Chuchhriaschin valley, three miles north of Spence's bridge, in section 26, township 17, range 25, west of 6th meridian.	"	20	75 inches of water recorded from Nicoelton creek, all the water from two springs in the mountains on the south side of the valley, and all the water from all other water sources on the reserve.
5A	"	Kamloops division of Yale district, in the	"	20	

		Chuchhriaschin valley, two miles north of Spence's bridge, in section 23, township 17, range 25, west 6th meridian.			
6	Nicoelton	Kamloops division of Yale district, in the Nicoelton valley, four miles north of Spence's bridge, in township 18, range 25, west of the 6th meridian.	Cook's Ferry	2008·50	50 inches of water recorded from Nicoelton creek, and all the water from all other sources of water-supply on the reserve.
7	Kloklowuck	Kamloops division of Yale district, in the Nicola valley, seven miles from Spence's bridge, on the right bank of the Nicola river.	"	219	10 inches of water recorded from the stream near the southern end of the reserve, 40 inches from Kloklowuck creek, and all the water from all other sources of water-supply on the reserve.
8	Tsinkahtl	Kamloops division of Yale district, on the right bank of Thompson river, six miles above Spence's bridge.	"	19·80	5 inches of water from the spring nearest the reserve.
8A		Kamloops division of Yale district, on the hills above the 87 mile post on the Yale-Cariboo road, in section 7, township 18, range 24, west of 6th meridian.	"	10	
9	Pemynoos	Kamloops division of Yale district, on the left bank of the Thompson river, five miles above Spence's bridge, in townships 17, 18, range 24, west of 6th meridian.	"	1507·70	100 inches of water recorded from Pemynoos creek, 200 inches of water from Incaughkalk creek, and 100 inches from Pokheitsk creek.
10	Pokheitsk	Kamloops division of Yale district, on the left bank of the Thompson river, above and adjoining reserve No. 9.	"	36	Not surveyed. 50 inches of water recorded from Pokheitsk creek.
11	Spatsum	Kamloops division of Yale district, on the left bank of Thompson river, ½ mile above Kimball railway station, in section 31, township 18, range 24, west of 6th meridian.	"	193	50 inches of water recorded from Pokheitsk creek, 25 inches from Spatsum creek, and all the water from all sources of water-supply on the reserve.
11A	"	Kamloops division of Yale district, on the left bank of Thompson river, to the north of and adjoining reserve No. 11.	"	160	Allotted by Commissioner O'Reilly, Oct. 14, 1889. Not surveyed. Reserves Nos. 1, 2, 3, 4, 5, 5A, 6, 7, 8, 8A, were allotted by Commissioner Sproat, July 20, 1878; Nos. 9, 10, 11, on June 30, 1880. These reserves were surveyed in 1885.
12	Chilthmux	Kamloops division of Yale district, on Pokheitsk creek, about 15 miles from its mouth.	"	365	Allotted by Commissioner O'Reilly, Oct. 15, 1889. Not surveyed.
13	Quiltanton	Kamloops division of Yale district, on the eastern shore of Divide lake, Highland valley, about 1 mile northeast of reserve No. 12.	"	520	
14	Enqnocto	Kamloops division of Yale district, in Highland valley, 1¼ miles east of reserve No. 13.	"	560	
15	Squetankilhats	Kamloops division of Yale district, in Highland valley, ¾ mile east of reserve No. 14.	"	520	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS-OKANAGAN AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
....	Deadman's Creek.....	Kamloops division of Yale district, on the banks of Deadman's creek, a tributary of the Thompson river.	Deadman's Creek. ..	20·134	Allotted by Joint Reserve Commission, July 28, 1877. Surveyed. 500 inches of water recorded from Deadman's creek, 25 inches from Bates creek, and all the water from all other sources of water-supply on the reserve.
1	Kamloops.....	Kamloops division of Yale district, on the right bank of the Thompson river, at its confluence with the north fork, in townships 20 and 21, range 17, west of 6th meridian.	Kamloops.	33·131	500 inches of water recorded from St. Paul's creek, and all the water from all sources of water-supply on the reserve.
2	Fishing station.....	Kamloops division of Yale district, at the outlet of Trapp lake, S. 34, tp. 17, R. 17, W. 6th M.	"	15	Allotted by Joint Reserve Commission, July 29, 1877.
3	" "	Kamloops division of Yale district, on the western shore of Trapp lake, S. 27, 34, tp. 17, R. 17, W. 6th M.	"	7	Surveyed.
4	Timber reserve, Gilead ...	Kamloops division of Yale district, on the right bank of the north fork of Thompson river, about 24 miles from its mouth.	"	180	Reserves 1, 2, 3 and 5 are within the railway belt; it is uncertain whether No. 4 is or not. 50 inches of water from the stream next above the reserve.
5	Fishing station.....	Kamloops division of Yale district, on the banks of Heffley creek, a tributary of the North Thompson.	"	46	
1	Nekliptum	Yale district, near the left bank of the Fraser river, 46½ miles above Yale, on the banks of Nekliptum creek, township 13, range 26, west of the 6th meridian.	Kanaka Bar	30	25 inches of water recorded from Nekliptum creek, and all the water from all sources of water-supply on the reserve.
2	Kanaka Bar.	Yale district, on the left bank of the Fraser, 47 miles above Yale, in township 13, range 27, west of 6th meridian	"	118	10 inches of water recorded from Nekliptum creek, 5 inches from Moneylux creek, and all the water from all sources of water-supply on the reserve.
3	Pegleg.....	Yale district, quarter mile east of reserve No. 2, in township 13, range 26, west of 6th meridian.	"	10	5 inches of water recorded from Pegleg creek.
4	Whycek.	Yale district, on the right bank of the Fraser at Kanaka Bar, 46½ miles above Yale, in township 13, range 27, west of 6th meridian.	"	351	100 inches of water recorded from Whycek creek, all the water from a neighbouring spring, and all the water from all sources of water-supply on the reserve. The Kanaka Bar reserves are within the railway belt, they were defined by Commissioner Sproat, June 18, 1878. Surveyed, 1885. Final confirmation, June

1	Nananahout	Kamloops division of Yale district, on the trail from Lytton to Hat creek, in township 17, ranges 26, 27, west of coast meridian.	Lytton	770	24, 1887.
2	Nnuantin	Kamloops division of Yale district, on the left bank of Fraser river, two miles north of Lytton, in section 13, township 15, range 27, west 6th meridian.	"	477	
3	Spintlum Flat	Kamloops division of Yale district, on the left bank of Fraser river, seven miles above Lytton, in township 16, range 27, west of 6th meridian.	"	338·50	50 inches of water recorded from two small creeks at the north end of the reserve, and all the water from all sources of water-supply on the reserve.
4	Nickle Palm	Kamloops division of Yale district, on the right bank of the Fraser, 20 miles above Lytton.	"	111	All the water recorded from Ilknaichin creek, which forms the northwestern boundary of the reserve.
5	Seah	Kamloops division of Yale district, on the right bank of Fraser, one mile below Foster's Bar, in townships 17, 18, ranges 27, 28, west 6th meridian.	"	329	All the water from Fort Dallas creek recorded for use on this reserve. A grave-yard on the right bank of the Fraser, one mile below this reservation, is also reserved. The Lytton Indians have the privilege of fishing on both banks of the Fraser from a point one-quarter of a mile north of this reserve and extending one mile down stream.
6	Nesikep	Kamloops division of Yale district, 14½ miles below Lillooet on the banks of Fraser river, in township 18, range 28, west 6th meridian.	"	1,363	100 inches of water recorded from Nesikep creek, 100 inches from Stnouck creek. The Lytton Indians have the privilege of fishing on both banks of the Fraser river within this reserve.
7	Fish Lake	Kamloops division of Yale district, at the foot of Fish lake, on Stnouck creek.	"	80	
8	Maka	Kamloops division of Yale district, in section 17, township 15, range 26, west of 6th meridian.	"	10	5 inches of water recorded from Bootahnie creek.
9	Stryen	Kamloops division of Yale district, on the right bank of the Fraser river, at Stryen creek, in township 15, range 27, west of 6th meridian.	"	629·50	250 inches of water recorded from Stryen creek, 50 inches from Nepuchcen creek, and all the water from all sources of water-supply on the reserve.
10	Nkaih	Kamloops division of Yale district, on the right bank of the Fraser, one and a half miles above No. 9 reserve, in township 16, range 27, west of 6th meridian.	"	281	50 inches of water recorded from Nepuchcen creek, 50 inches from Nekerkht creek.
11	Yawaucht	Kamloops division of Yale district, on the right bank of the Fraser, north of and adjoining reserve No. 10, in township 16, range 27, west of 6th meridian.	"	289·50	50 inches of water recorded from Yawaucht creek.
12	Tsaukan	Kamloops division of Yale district, on the right bank of the Fraser, 12 miles above Lytton, in section 28, township 16, range 27, west of 6th meridian.	"	141	10 inches of water recorded from Nezultco creek.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS-OKANAGAN AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
13	Cameron Bar	Kamloops division of Yale district, on the right bank of the Fraser, 13 miles above Lytton, in townships 16, 17, range 27, west 6th meridian.	Lytton	87	75 inches of water recorded from Nkuikuet creek and all the water from all other sources of water-supply on the reserve.
14	Halhalaeden	Kamloops division of Yale district, on the left bank of the Fraser, in township 15, range 27, west 6th meridian.	"	92½	100 inches of water recorded from Halhalaeden creek, all the water from Kuainck creek and from all other sources of water-supply on the reserve.
15	Bootahnie	Kamloops division of Yale district, on the trail from Lytton to Hat creek, 10 miles from the former, in townships 16, 17, range 26, west 6th meridian.	"	3,840	200 inches of water from Inchawkawwisken creek and all the water from all sources of water-supply on the reserve.
16	Two Mile Creek	Kamloops division of Yale district, on the left bank of the Thompson river, 1½ miles above Lytton, in section 7, township 15, range 26, west 6th meridian.	"	11	5 inches of water recorded from Two Mile creek and all the water from all other sources of water-supply on the reserve.
17	Klahkamich	Yale district, southeast of the town of Lytton, in section 6, township 15, range 26, west 6th meridian.	"	22½	5 inches of water recorded from Lytton creek.
18	Klickkumcheen	Kamloops division of Yale district, on the left bank of the Thompson river, at its confluence with the Fraser, township 15, range 26, west 6th meridian.	"	47	10 inches of water recorded from the discharge pipe of the Canadian Pacific Railway Company's station cistern, 10 inches from Lytton creek and all the water from two springs between the reserve and the Fraser river.
19	Nocten	Kamloops division of Yale district, on the right bank of the Thompson river, opposite the 61 mile post from Yale, township 15, range 26, west 6th meridian.	"	8·90	5 inches of water recorded from the creek at the northeast corner of the reserve, and all the water from all other sources of water-supply on the reserve.
20	Kitzowit	Yale district, on the Yale-Cariboo wagon road, between the 54 and 55 mile posts, in section 25, township 14, range 27, west of 6th meridian.	"	27	15 inches of water recorded from the stream flowing through the reserve and all the water from all other sources of water-supply on the reserve.
21	Inkluckcheen	Kamloops division of Yale district, 3 miles north of Lytton, in section 24, township 15, range 27, west 6th meridian.	"	181	50 inches of water recorded from Bootahnie creek and all the water from all other sources of water-supply on the reserve.
22	Kleetlekut	Kamloops division of Yale district, to the east of and adjoining reserve No. 2, in section 18, township 15, range 26, west of 6th meridian.	"	300	20 inches of water from Inchawkawwisken creek to be discharged into Bootahnie lake, thence to reserves Nos. 2 and 22, and all the water from all other sources of water-supply on the reserve.

23	Nohomeen	Kamloops division of Yale district, on the right bank of the Fraser, 1½ miles above Lytton.	"	32	50 inches of water recorded from Nohomeen creek.
24	Tuckozap	Kamloops division of Yale district, at the confluence of the Thompson and Fraser rivers, on the left bank of the latter, in township 15, ranges 26, 27, west of 6th meridian.	"	211	50 inches of water recorded from Bootahnie creek.
25	Nickeyeah	Yale district, on the right bank of the Fraser, 1½ miles below Lytton, in township 14, range 27, west of coast meridian.	"	246½	200 inches of water recorded from Nickeyeah creek.
26	Skwayaynope	Yale district, to the south of and adjoining reserve No. 25, in township 14, range 27, west of 6th meridian.	"	237	100 inches of water recorded from Kwellanaht creek, and all the water from all other sources of water supply on the reserve.
27	Papyum	Kamloops division of Yale district, on the right bank of the Fraser, opposite Lytton, in section 1, township 15, range 27, west 6th meridian.	"	129	100 inches of water recorded from Nickeyeah creek. A grave-yard, 7 chains north of Papyum, is also reserved. The Lytton reserves are in the railway belt. Reserves 1 to 7 were allotted by Commissioner O'Reilly, August 24, 1881. Reserve No. 27 was allotted by Commissioner O'Reilly, May 21, 1886. Reserves Nos. 8 to 26 were allotted by Commissioner Sproat, July 10, 1878. Final confirmation by the Provincial Government, June 24, 1887. The reserves were surveyed in 1884, 1885, 1886.
1	Nicomen	Kamloops division of Yale district, on the left bank of the Thompson river, 68 miles from Yale, in section 17, township 15, range 25, west 6th meridian.	Nicomen	151·50	50 inches of water recorded from the stream which flows through the reserve.
2	Kykinalko	Kamloops division of Yale district, on the banks of Nicomen creek, ½ mile from its confluence with the Thompson river.	"	130	50 inches of water recorded from Nicomen creek.
3	Sackum	Kamloops division of Yale district, on the left bank of the Thompson, near the 71 mile post from Yale, townships 15, 16, range 25, west 6th meridian.	"	20	20 inches of water recorded from Sackum creek.
	Grave-yard	6 chains south of reserve No. 3.	"	1·53	Shown on plan but not in minutes of decision.
4	Skhpowtz	Kamloops division of Yale district, on the right bank of Thompson river, ¼ mile below reserve No. 3, in section 32, township 15, range 25, west 6th meridian.	"	16	20 inches of water recorded from Skhpowtz creek.
5	Klahkowit	Kamloops division of Yale district, on the right bank of the Thompson, opposite the 72 mile post from Yale.	"	197	20 inches of water recorded from Kioalulat creek.
6	Sleetsis	Kamloops division of Yale district, on the right bank of the Thompson, opposite the 74 mile post from Yale, near Drynock, section 17, township 16, range 25, west 6th meridian.	"	22	100 inches of water recorded from Sleetsis creek.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS-OKANAGAN AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
7	Shoskhost	Kamloops division of Yale district, on the right bank of the Thompson river, opposite the 67 mile post from Yale, in section 18, township 15, range 25, west of 6th meridian.	Nicomen	19	20 inches of water recorded from Shoskhost creek.
8	Unpukpulquatum	Kamloops division of Yale district, on the right bank of the Thompson, opposite the 68 mile post from Yale, and partly in section 18, township 15, range 25, west 6th meridian.	"	6·50	20 inches of water recorded from Unpukpulquatum creek.
9	Skeikut	Kamloops division of Yale district, in township 15, range 24, west of 6th meridian.	"	390	100 inches of water recorded from the lakes 3 miles south of the reserves and from the stream which flows through the lakes.
10	Squianny	Kamloops division of Yale district, 3 miles east of Drynock, in township 16, ranges 24, 25, west 6th meridian.	"	1,520	50 inches of water recorded from Squianny creek, and all the water from all other sources of water-supply on the reserve.
11	Enhalt	Kamloops division of Yale district, ¼ mile south of reserve No. 10, in township 16, range 25, west of 6th meridian.	"	140	50 inches of water recorded from the small lake at Enhalt; 50 inches from the stream flowing southeast to Skaikut.
12	Skaynaneichst	Kamloops division of Yale district, in section 15, township 16, range 24, west 6th meridian.	"	200	75 inches of water recorded from Skaynaneichst creek.
13	Naykikoulth	Kamloops division of Yale district, on the left bank of the Nicola river, in section 7, township 16, range 23, west of 6th meridian.	"	152	30 inches of water recorded from Naykikoulth creek.
14	Putkwa	Kamloops division of Yale district, on the right bank of the Thompson river, in sections 11, 14, township 15, range 26, west of 6th meridian.	"	10·50	Water record: all the water from all sources of water-supply on the reserve.
15	Shuonchten	Kamloops division of Yale district, on the right bank of the Thompson, in sections 13, 14, township 15, range 26, west of 6th meridian.	"	10·50	20 inches of water recorded from Shuonchten creek.
					The Niconen reserves are within the railway belt. Nos. 1 to 13 were allotted by Commissioner Sproat, July 13, 1878. Nos. 14 and 15 were reserved by Dominion Order in Council, December 2, 1895. The reserves were surveyed in 1879 and 1886.
1	Nicola Mamcet	Kamloops division of Yale district, near the confluence of the Nicola river and Guichon creek.	Nicola (Lower)	11,356	300 inches of water recorded from Mamcet river. Allotted by Commissioner Sproat, Sept. 5, 1878.
2	Joeyaska	Kamloops division of Yale district, in section	"	320	Allotted by Commissioner Sproat, Sept. 11, 1878.

		11, township 91.			
3	Pipseul	Kamloops division of Yale district, about six miles north of Mameet lake in township 17, range 21, west of 6th meridian.	"	220	Allotted by Commissioner Sproat, Sept. 5, 1878. 50 inches of water recorded from Pipseul creek. In railway belt.
4	Zoht No. 1	Kamloops division of Yale district, near the foot of Nicola lake, in township 94.	"	500	Allotted by Commissioner Sproat, Sept. 10, 1878. 50 inches of water recorded from Clapperton creek.
5	" No. 2	Kamloops division of Yale district, in section 36, township 94; also known as lot 716, group 1, Yale district.	"	160	The old Zoht reserve surrendered to the Provincial Government by Dominion Order in Council of May 16, 1899, in exchange for lot 716, group 1, Yale district. Final confirmation June 22, 1899.
6	Logan's	Kamloops division of Yale district, on Hamilton creek, (a tributary to the Nicola lake) twelve miles from its mouth.	"	45	Allotted by Commissioner Sproat, Sept. 12, 1878.
7	Hamilton Creek	Kamloops division of Yale district, on the banks of Hamilton creek, seven miles from its mouth.	"	4,100	Allotted by Commissioner Sproat, Sept. 12, 1878. 100 inches of water recorded from Teenamilst creek; 200 inches from Hamilton creek.
8	Speous	Kamloops division of Yale district, one mile southeast of the junction of the Nicola and Speous rivers, in townships 87 and 90.	"	280	100 inches of water recorded from Chiuppalst creek; 100 inches from Nuaitch creek and 100 inches from Hannhuwiwihl creek. Allotted by Commissioner Sproat, July 23, 1879.
9	Nooaitch Grass	Kamloops division of Yale district, one mile and a half east of the Nicola river about twenty-five miles from its mouth, partly in townships 14 and 15, range 22, west of 6th meridian.	"	1,960	In the railway belt. Allotted by Commissioner Sproat, Aug. 26, 1878.
10	Nooaitch	Kamloops division of Yale district, on the banks of the Nicola river about twenty miles from its mouth, in townships 14, 15, ranges 22, 23, west of 6th meridian.	"	2,310	In the railway belt. 50 inches of water from Nicola river with all the water from a stream running through the reserve. Allotted by Commissioner Sproat, Aug. 26, 1878.
11	Shackan	Kamloops division of Yale district, on the banks of the Nicola river about twelve miles from its mouth, in townships 15, 16, ranges 23, 24, west of 6th meridian.	"	6,470	In the railway belt. 100 inches of water recorded from Nikikuhl creek; 200 inches from Shhahanih creek; 100 inches from Zasetum creek; 200 inches from Papsilqua creek. Allotted by Commissioner Sproat, Aug. 20, 1878.
12	Soldatquo	Kamloops division of Yale district, in township 16, range 23, west of 6th meridian.	"	2,110	50 inches of water recorded from Lukatcheen creek; 50 inches from Soldatquo creek. In the railway belt. Allotted by Commissioner Sproat, Aug. 20, 1878.
13	Papsilqua	Kamloops division of Yale district, on Papsilqua creek, in sections 12, 13, township 16, range 23, west of 6th meridian.	"	730	100 inches of water recorded from Papsilqua creek. In the railway belt. Allotted by Commissioner Sproat, Aug. 20, 1878.
					The lower Nicola reserves were surveyed in 1879.
1	Nicola Lake	Kamloops division of Yale district, on the eastern shore of Nicola lake, at its head, in townships 96 and 97.	Nicola (Upper)	2,692	200 inches of water recorded from Nicola river.
2	Hamilton Creek Fishery or Quilchena.	Kamloops division of Yale district, on the southern shore of Nicola lake at the mouth of Hamilton or Quilchena creek, in township 97.	"	60	50 inches of water recorded from Quilchena creek.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS OKANAGAN AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
3	Douglas Lake	Kamloops division of Yale district, at the lower end of Douglas lake, partly in township 96.	Nicola (Upper)	23 047	300 inches of water recorded from Spahomin creek; 100 inches from lake at head of Lauder creek; 50 inches from a spring on southwest side of reserve.
4	Spahomin Creek	Kamloops division of Yale district, on Spahomin creek, about seven miles from its mouth.	"	320	50 inches of water recorded from Spahomin creek.
5	Chapperon Lake	Kamloops division of Yale district, on the western shore of Chapperon lake.	"	725	50 inches of water recorded from Murray creek.
6	" Creek Fishery	Kamloops division of Yale district, on Upper Chapperon creek, about three quarters of a mile from its mouth.	"	15	25 inches of water recorded from Upper Chapperon creek.
7	Salmon Lake	Kamloops division of Yale district, on the trail from Nicola to Grand Prairie.	"	172	Reserves Nos. 1 to 7 were allotted by Commissioner Sproat, Sept. 28, 1878, they were surveyed in 1879.
8	Spahomin Creek	Kamloops division of Yale district, between reserves Nos. 3 and 4.	"	3,857	Allotted by Commissioner O'Reilly, Oct. 10, 1889. Surveyed 1894. Final confirmation, May 7, 1895.
1	Neskainlith, No. 1	Kamloops division of Yale district, on the right bank of the Thompson river, four miles below Little Shuswap lake, township 21, range 13, west of 6th meridian.	Neskainlith Halaut	3,215	400 inches of water recorded from Neskainlith creek.
2	" No. 2	Kamloops division of Yale district, on the left bank of the Thompson river, opposite reserve No. 1.	"	2,456	100 inches of water recorded from Chase creek.
3	Switsemalph	Kamloops division of Yale district, the central portion of Switsemalph reserve on Salmon arm of Shuswap lake, in township 20, range 10, west of 6th meridian.	"	4,295	Two reserves on the Salmon arm were allotted by Joint Reserve Commission to the Neskainlith, Adams lake and Little Shuswap lake tribes in common. They have since been divided by the Indian agent among the several bands interested. The Neskainlith reserves are within the railway belt; they were allotted by Joint Reserve Commission, August 13, 1877, and surveyed 1881 and 1885.
	North Thompson	Kamloops division of Yale district, on the left bank of the North Thompson river about forty-five miles from Kamloops.	North Thompson and Canoe Lake.	3,220	50 inches of water recorded from Newkykwatston creek; 50 inches from Cukelmqualk creek.
2	Nehalliston	Lillooet district, near the fort, and opposite Nehalliston creek, fifty miles above Kamloops.	"	5	5 inches of water recorded from Silpahan creek.
3	Barriere River	Kamloops division of Yale district, on the left bank of Barriere river, a quarter of a mile from its confluence with the North Thompson, thirty-eight miles above Kam-	"	6	5 inches of water recorded from Barriere river. Allotted by Joint Reserve Commission, July 5, 1877. Surveyed, 1878.

		loops.			
4	Lewis Creek	Kamloops division of Yale district, on the left bank of Lewis creek, about a quarter of a mile from its confluence with the North Thompson, about thirty-five miles above Kamloops.	"	8	5 inches of water recorded from Lewis creek.
1	Okanagan	Osoyoos division of Yale district, at the head of Okanagan lake.	Okanagan	25·539	100 inches of water recorded from Siwash creek; 100 inches from Six Mile creek; 35 inches from Lewis creek; 150 inches from O'Keefe's creek; 75 inches from White Man's creek.
2	Otter Lake	Osoyoos division of Yale district, on the shore of Otter lake, in section 23, township 7.	"	62	
3		Osoyoos division of Yale district, the southwest quarter, section 13, township 7.	"	160	
5	Swan Lake	Osoyoos division of Yale district, in sections 26 and 35, township 8, on the northern shore of Swan lake.	"	68	Allotted by Joint Reserve Commission, October 15, 1877. Surveyed 1880.
5	Long Lake	Osoyoos division of Yale district, on the northern shore of Long lake, a portion of section 22, township 9.	"	128	
6	Priest's Valley	Osoyoos division of Yale district, at the head of the south arm of Okanagan lake, in section 30, township 9.	"	83	
7	Duck Lake	Osoyoos division of Yale district, on the northern shore of Duck lake, in townships 20 and 23.	"	457	
8	Mission Creek	Osoyoos division of Yale district, on the banks of Mission creek, portions of sections 5, 6, 7 and 8, township 26.	"	55	Allotted by Joint Reserve Commission, October 15, 1877. Surveyed, 1880.
9	Tsinstikeptum	Osoyoos division of Yale district, on the western shore of Okanagan lake, in township 25.	"	2,438	
10		Osoyoos division of Yale district, on the western shore of Okanagan lake, 3½ miles north of reserve No. 9.	"	800	Allotted by Commissioner O'Reilly, October 19, 1888. Surveyed 1889. Final confirmation, April 28, 1891.
1	Hay Meadow	Kamloops division of Yale district, at the head of Venables valley, section 15, township 19, range 25, west of 6th meridian.	Oregon Jack Creek	30	
2		Kamloops division of Yale district, at the forks of Oregon Jack creek, in section 21, township 19, range 25, west of 6th meridian.	"	35	Allotted by Commissioner Sproat, August 3, 1878. Surveyed, 1885. Final confirmation, June 24, 1887. 100 inches of water recorded from Oregon Jack creek.
3	Oregon Jack Creek	Kamloops division of Yale district, on the right bank of the Thompson river, at the mouth of the Oregon Jack creek.	"	129	The Oregon Jack Creek Indians have the privilege of salmon fishing on both banks of the Thompson river, from quarter mile above the mouth of Oregon Jack creek, down stream a distance of two miles.
4	Nepa	Kamloops division of Yale district, on the left bank of the Thompson river at Nelson creek, in section 32, township 19, range 24, west of 6th meridian.	"	322	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS OKANAGAN AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
5	.....	Kamloops division of Yale district, on the right bank of the Thompson river, to the south of and adjoining reserve No. 3, in township 19, ranges 24 and 25, west of 6th meridian.	Oregon Jack Creek	1,043	Allotted by Commissioner O'Reilly, August 12, 1881. Surveyed, 1885. Final confirmation, June 24, 1887.
6	.....	Kamloops division of Yale district, on Nelson creek, in townships 19 and 20, range 23, west of 6th meridian.	"	750·70	Allotted by Commissioner O'Reilly, May 19, 1886. Surveyed, 1885. Final confirmation, June 24, 1887.
7	.....	Kamloops division of Yale district, south of reserve No. 6, in section 21, township 19, range 24, west of 6th meridian.	"	80	
1	Osoyoos.....	Osoyoos division of Yale district, at the head of Osoyoos lake, portions of townships 48, 49, 50 and 51.	Osoyoos	32·097	50 inches of water recorded from A-tsi-hlak creek; 100 inches from Wolf creek and 300 inches from Gregoire creek.
2	Dog Lake.....	Osoyoos division of Yale district, on the banks of Okanagan river, at the outlet of Dog lake, in township 86.	"	71	The Osoyoos reserves were allotted by Joint Reserve Commission, Nov. 21, 1877. Surveyed, 1889. Final confirmation April 28, 1891.
1	Penticton.....	Osoyoos division of Yale district, at the foot of Okanagan lake, partly in township 88.	Penticton.....	47·829	100 inches of water recorded from Trout creek; 100 inches from Snake creek, and 60 inches from Marron creek. Reserve No. 1 was allotted by Joint Reserve Commission, November 24, 1877. Surveyed, 1889. Final confirmation, July 10, 1895.
2	Timber reserve	Osoyoos division of Yale district, township 87, between Okanagan and Dog lakes.	"	321	Allotted by Commissioner O'Reilly, July 31, 1893. The southern portion of reserve No. 2, as allotted by Joint Reserve Commission, Nov. 24, 1887, was surrendered July, 1893. Surveyed 1889. Final confirmation, July 10, 1895.
2A	"	To the west of and adjoining reserve No. 2.	.....	194	Conveyed by Mr. Thomas Ellis to the Crown, Sept. 21, 1894. Surveyed, 1894. Final confirmation, July 10, 1895.
3	Nicola Prairie.....	Osoyoos division of Yale district, adjoining lots 1, 2, 3, group 1.	"	350	Allotted by Joint Reserve Commission, Nov. 24, 1887. Surveyed, 1889. Final confirmation, July 10, 1895.
1	Quaaout.....	Kamloops division of Yale district, north of Little Shuswap lake, and on the right bank of Adams creek at its mouth, in township 22, range 12, west of 6th meridian.	Little Shuswap Lake (Knaut).	4,265	One hundred inches of water recorded from Adams river, 25 inches from a lake at the southwest corner of the reserve, and all the water from all other sources of water-supply on the reserve.
2	Chum Creek.....	Kamloops division of Yale district, at the southeast corner of Little Shuswap lake, in township 22, range 12, west of 6th meridian.	" "	660	Fifty inches of water from Jim's or Trail creek, and all the water from all other sources of water-supply on the reserve.
3	Meadow.....	Kamloops division of Yale district, in sec-	" "	60	Allotted by Joint Reserve Commission, August

		tion 25, township 21, range 12, west of 6th meridian.				11, 1877. Surveyed, 1878 and 1884. Final confirmation, October 28, 1891.
4	Scotch Creek	Kamloops division of Yale district, on the right bank of the Great Shuswap lake, at the mouth of Scotch creek, in townships 22, 23, range 11, west of 6th meridian.	"	"	2,105	One hundred inches of water recorded from Scotch creek, 50 inches from Adams river, and all the water from all other sources of water-supply on the reserve.
5	North Bay	Kamloops division of Yale district, at the head of North bay, Salmon arm of Shuswap lake, at Tappen siding, in township 21, range 10, west of 6th meridian.	"	"	810	Twenty-five inches of water recorded from Skatkna creek, 25 inches from Skukukum creek, and all the water from all other sources of water-supply on the reserve. Two reserves on the Salmon arm were allotted August 16, 1877, by Joint Reserve Commission to the Neskainlith, Adams lake and Little Shuswap lake tribes in common. They have since been divided by the Indian agent among the several bands interested.
1		Osoyoos division of Yale district, on the left bank of the Similkameen river, in sections 4 and 9, township 52.	Similkameen (Lower)			Disallowed by the Provincial government, April 28, 1891. Cancelled by Commissioner O'Reilly, August 9, 1893.
2		Osoyoos division of Yale district, on the left bank of the Similkameen.	"	"	208	
3		Osoyoos division of Yale district, on both banks of the Similkameen, adjoining reserve No. 2 on the south.	"	"	1,750	
4	Narcisse's Farm	Osoyoos division of Yale district, on the right bank of the Similkameen river, opposite reserves Nos. 2 and 3, 9 miles north of the international boundary line.	"	"	1,851	Forty inches of water recorded from Sintlehahtan creek.
5	Joe Nahumcheen	Osoyoos division of Yale district, on both banks of the Similkameen, to the south of and adjoining reserve No. 3.	"	"	1,278	Ten inches of water recorded to be taken out of a spring at the back of Joe Nahumcheen's farm. One hundred inches of water from the Similkameen river.
6	Blind Creek	Osoyoos division of Yale district, part of sections 11 and 14, township 52.	"	"	400	
7&8	Skemeoskuankin	Osoyoos division of Yale district, on the right bank of the Similkameen river, north of and adjoining the international boundary line.	"	"	3,800	One hundred inches of water recorded from Skemeoskuankin creek.
9	Alexis	Osoyoos division of Yale district, on the left bank of the Similkameen river, five miles above Keremeos.	"	"	129	One hundred inches of water recorded from Achgheptlat creek.
10	Ashnola	Osoyoos division of Yale district, on the right bank of the Similkameen river, at its confluence with the Ashnola river.	"	"	4,153	One hundred inches of water recorded from Ashnola river and 50 inches from Jim's creek.
10A	"	On the right bank of the Similkameen river, to the north of and adjoining reserve No. 10.	"	"	3,724	
10B	"	On the right bank of the Similkameen river, to the south of and adjoining reserve No. 10	"	"	411	
11	Ashnola John's	Osoyoos division of Yale district, on the right bank of the Similkameen river, 13 miles above Keremeos.	"	"	585	One hundred inches of water recorded from Sintlutsepaskan creek.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS OKANAGAN AGENCY, BRITISH COLUMBIA *Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
12	..	Osoyoos division of Yale district, on Kereemeos creek, about 14 miles from Kereneos, on the Kereneos to the Penticton wagon road.	Similkameen (Lower) . .	150	Reserves Nos. 1, 2, 7, 8, 9, 10, 11 and 12 were allotted by Commissioner Sproat, October 12, 1878. No. 3 was allotted by Commissioner O'Reilly, September 22, 1884. Nos. 4, 5 and 6 were allotted by Commissioner O'Reilly, October 30, 1888. Nos. 10A, 10B and 12A were allotted by Commissioner O'Reilly, August 9, 1893.
12A	. . . . .	On Kereneos creek, to the north and west of reserve No. 12, and adjoining the same.	" "	1,130	Reserves 7, 8, 9, 10 and 11 finally confirmed, April 28, 1891. Reserves 2, 3, 4, 5, 6, 12, 10A, 10B and 12B, confirmed, June 8, 1895.
1	Vermilion Forks	Osoyoos division of Yale district, at Vermilion forks on the Similkameen river, near Princeton.	Similkameen (Upper). . .	26	
2	Chuchuwayha . ..	Osoyoos division of Yale district, on the banks of the Similkameen, at 20-Mile creek, 20 miles below Princeton.	" ...	1,387	200 inches of water recorded from Similkameen river. 100 inches of water recorded from 20-Mile creek. 100 inches of water recorded from Nkansiko, Aksspepaptsin and Chuchuwayha creeks. 100 inches recorded from Nkamahinat creek.
2A	"	To the west of and adjoining reserve No. 2.	" ...	1,013	
2B	"	On the right bank of the Similkameen, to the west of and adjoining reserve No. 2.	" . .	160	
3	Wolf Creek or Yakhlkaywalick.	Osoyoos division of Yale district, on the right bank of the Similkameen, at the mouth of Wolf creek, 9 miles from Princeton.	" . .	518	100 inches of water recorded from Wolf creek.
4	Nine Mile Creek.... .. .	Osoyoos division of Yale district, on the left bank of the Similkameen, at the mouth of 9-Mile creek, opposite reserve No. 3.	" ..	198	30 inches of water recorded from 9-Mile creek.
5	Lulu	Osoyoos division of Yale district, on the left bank of the Similkameen river, about 12 miles from Princeton.	" . ..	50	100 inches of water recorded from Lulu-a-kuh creek.
6	.. ..	Kamloops division of Yale district, on the trail from Princeton to Nicola, and about 12 miles distant from the former.	" ...	10	Reserves Nos. 1, 5 and 6 allotted by Commissioner Sproat, October 5, 1878.
7	Ilteoola.	Osoyoos division of Yale district, on the left bank of the Similkameen river, about 11 miles below Princeton.	" . ..	42	Reserve No. 2 allotted by Commissioner O'Reilly, October 26, 1888. Reserves Nos. 3, 4, 7, 2A and 2B allotted by Commissioner O'Reilly, August 5, 1893. Surveyed, 1900. Final confirmation, Feb. 14 & 22, 1902.

1	Kupchynalth (Upper)	Yale district, about 8 miles south of Lytton, in section 30, township 13, range 26, west of 6th meridian.	Siska Flat	20	20 inches of water recorded from Kupchynalth creek, and all the water from all other sources of water-supply which may be found on the two Kupchynalth reserves.
2	" (Lower)	Yale district, on the left bank of the Fraser river, about 8 miles below Lytton, in section 25, township 13, range 27, west of 6th meridian.	"	15 $\frac{50}{100}$	
3	Siska Flat	Yale district, on the left bank of the Fraser, about 7 miles below Lytton, in section 36, township 13, range 27, west of 6th meridian.	"	91	50 inches of water recorded from Siska creek, and from any other sources that may be found available, including a spring on the hillside.
4	Grave-yard	Yale district, on the Cariboo wagon road, 7½ miles south of Lytton, in section 30, township 13, range 26, west of 6th meridian.	"	$\frac{62}{100}$	
5	Zacht	Yale district, on the Cariboo wagon road, 6½ miles south of Lytton, in section 1, township 14, range 26, west of 6th meridian.	"	60	75 inches of water recorded from Siska creek and all the water from all sources of water-supply on the reserve.
	Humhampt	Yale district, about 5½ miles below Lytton, near the right bank of the Fraser.	"	10	20 inches of water recorded from Humhampt creek, and all the water from all other sources of water supply on the reserve.
7	Nahamanak	Yale district, at the Canadian Pacific railway bridge across the Thompson, about 7 miles below Lytton, in section 36, township 13, range 27, west of 6th meridian.	"	362	50 inches of water recorded from Hynmatko creek, 50 inches of water recorded from N-tlah-tla-pat-ko creek, and all the water from all other sources of water-supply on the reserve. The Siska Flat reserves were allotted by Commissioner Sproat, June 18, 1878. Surveyed, 1885. Final confirmation, June 24, 1887. All these reserves are within the railway belt.
1		Yale district, ½ mile east of Fraser river and 4½ miles south of Lytton, in section 13, township 14, range 27, west of 6th meridian.	Skuppah	20	15 inches of water recorded from Skuppah creek, and all the water from all other sources of water supply on the reserve.
2	Inklyuhkinatko	Yale district, on the left bank of the Fraser, 3 miles below Lytton, in section 24, township 14, range 27, west of 6th meridian.	"	169	20 inches of water recorded from Inklyuhkinatko creek, and all the water from all other sources of water-supply on the reserve.
3	Pooeyelth	Yale district, near the right bank of the Fraser, 5 miles below Lytton, in section 11, township 14, range 27, west of 6th meridian.	"	20	40 inches of water recorded from Pooeyelth creek, and all the water from all other sources of water-supply on the reserve.
4	Skuppah	Yale district, on the left bank of the Fraser, below Skuppah creek, 4 miles below Lytton, in section 13, township 14, range 27, west 6th meridian.	"	59	25 inches of water recorded from Skuppah creek, and all the water from all other sources of water-supply on the reserve. These reserves are all in the railway belt. They were allotted by Commissioner Sproat, June 18, 1878; surveyed in 1885, and finally confirmed June 24, 1887.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KAMLOOPS OKANAGAN AGENCY, BRITISH COLUMBIA *Continued.*

No	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	Salmon River	Kamloops division of Yale district, on the right bank of Salmon river, in township 34.	Spallumcheen	3,853	
2	Enderby	Kamloops division of Yale district, on both banks of the Spallumcheen river, in townships 35, 37 and 38.	"	5,625	Allotted by Joint Reserve Commission, September, 3, 1877. Surveyed, 1880.
	Grave-yard	In Mr. Fortune's field, south of the Spallumcheen river, in township 38.	"	0·75	
3	Sicamous	Kamloops division of Yale district, on the western shore of Mara lake, the fractional quarter of section 25 and the northeast quarter of section 26, township 21, range 8, west of 6th meridian.	"	201	In the railway belt. Allotted by Comm'r O Reilly, Aug. 11, 1893. Surveyed, 1901. Confirmed by O. C., Dec. 7, 1901.
1	Spuzzum	Yale district, on the right bank of the Fraser river, 9 miles north of Yale, in sections 13, 14, 23, 24, township 8, range 26, west of 6th meridian.	Spuzzum	302	227 acres of this reserve were allotted by Comm'r Sproat, May 21, 1878; 75 acres additional were allotted by Comm'r. O'Reilly, April 26, 1884. 200 inches of water recorded from Spuzzum creek, 50 inches from the creek west of the reserve, 50 inches from the creek one mile below the reserve, and all the water from all other sources of water-supply on the reserve.
2	Papsilqua	Yale district, 11 miles north of Yale, in sections 25, 36, township 8, range 26, west 6th meridian.	"	41	20 inches of water recorded from the stream which runs into the lake on the reserve.
3	Teequaloose	Yale district, ¼ mile southwest of the Suspension bridge, in section 2, township 9, range 26.	"	19	25 inches of water recorded from the stream which flows through the reserve.
4	Yekakin	Yale district, on the left bank of the Fraser, 16 miles above Yale, in section 23, township 9, range 26, west of 6th meridian.	"	72·50	All the water recorded from all sources of water supply on the reserve.
5	Long Tunnel	Yale district, on the right bank of the Fraser, 15 miles from Yale, in township 9, range 26, west of 6th meridian.	"	8	All the water from the small stream which flows through the reserve, and all the water from all other sources of water-supply on the reserve.
6	Skuet	Yale district, on the left bank of the Fraser, ¾ mile below the Suspension bridge, in section 36, township 8, range 26, west 6th meridian.	"	13·50	All the water recorded from the two streams which flow through the reserve. All these reserves are within the railway belt, Nos. 2, 3, 4, 5 and the southern portion of No. 6 were allotted by Comm'r Sproat, May 21, 1877. The northern portion of No. 6, was allotted by Comm'r O'Reilly,

					April 26, 1884. Surveyed, 1882, 1884. Final confirmation, May 1, 1886.
1	Coldwater	Kamloops division of Yale district, on the banks of the Coldwater river, about 4 miles from its mouth.	Lower Nicola, Spuzzum, Boston Bar, Boothroyd, Siska, Upper Similkameen, in common.	4,640	
2	Paul's Basin	Yale district, on the left bank of the Coldwater river, about 12 miles from its mouth.		1,594	100 inches of water recorded from the stream flowing through the reserve.
3	Meadow	Kamloops division of Yale district, about 4 miles east of reserve No. 1.		42·50	20 inches of water recorded from the stream running into the lake on the reserve. Allotted by Commissioner Sproat, Sept. 11, 1878. Surveyed, 1886. Final confirmation, May 8, 1889.

KOOTENAY AGENCY, BRITITH COLUMBIA.

1	Kootenay	East Kootenay district, on the right bank of the Kootenay river at the mouth of St. Mary's river.	Kootenay	17,425	Allotted by Commissioner O'Reilly, August 20, 1884. Surveyed, 1866. Final confirmation, June 10, 1887.
2	Tobacco Plains	East Kootenay district, in Kootenay valley, adjacent to the international boundary line.	"	10,560	Allotted by Commissisner O'Reilly, July 18, 1884. Surveyed, 1886. Final confirmation, June 10, 1887.
3	Columbia Lake	East Kootenay district, in the Columbia valley, between the lower Columbia lake and the Rocky mountains.	"	8,456	Allotted by Commissioner O'Reilly, August 9, 1884. Surveyed, 1886. Final confirmation, June 10, 1887.
4	Isidores Ranch	East Kootenay dist., in the Kootenay valley.	"	680	Allotted by Commissioner O'Reilly, September 27, 1887. Surveyed, 1888. Final confirmation, July 27, 1888.
5	Cassimayooks	" "	"	160	
6	Bummers Flat	East Kootenay district, on the left bank of the Kootenay river, 3 miles above the mouth of St. Mary's river.	"	190	
	Lower Kootenay	West Kootenay district, on the right bank of the Kootenay river, about 3 miles north of the international boundary line.	Lower Kootenay	1,831·50	Allotted by Commissioner O'Reilly, August 28, 1884. Surveyed, 1886. Final confirmation, June 10, 1887.
	Shuswap	East Kootenay district, on the right bank of the Columbia river, opposite the mouth of Toby creek.	Shuswap, Kinbasket's, band.	2,759	Allotted by Commissioner O'Reilly, August 14, 1884. Surveyed, 1886. Final confirmation, June 10, 1887.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KWAWKEWLTH AGENCY.

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	Fort Rupert or Tsa-kis	Rupert district, Beaver harbour, Vancouver island.	Fort Rupert / Kwawkewlth	4·25	
2	Kip-pase	Rupert district, Beaver harbour, about 7 chains west of reserve No. 1.	"	34	
3	Shell Island	Rupert district, Beaver harbour, about one mile north of reserve No. 1.	"	0·70	
4	Tsul-qua-te	Rupert district, on the western shore of Hardy bay.	"	38·70	Allotted by Commissioner O'Reilly, September 18, 1886. Surveyed, 1887. Final confirmation, July 27, 1888.
5	Thomas Point	Rupert district, at Thomas point, about one mile east of Fort Rupert.	"	42·30	
6	Keogh	Rupert district, at the mouth of the Keogh river, about 2½ miles east of Fort Rupert.	"	4·50	
7	Klickseewy	Rupert district on Queen Charlotte sound, about 12 miles southeast of Fort Rupert and east of section 9.	"	134·80	
1	Gwayasdums	Coast district, on the western shore of Gilford island, Retreat passage.	Gilford Island; Tsah-waw-ti-neuch.	62·90	
1A	Burial-ground	At northern extremity of Sail island.	Ah-kwaw-ah-mish	0·85	
2	Kumstamis	Coast district, on the mainland of British Columbia, on northern shore of Claydon bay.	Kwaw-waw-i-nuck	17·20	
3	Keogh	Coast district, at the eastern extremity of Mackenzie sound.	"	10·50	
4	Quay	Coast district, on the western shore of Nimmo bay, Mackenzie sound.	"	10	Allotted by Commissioner O'Reilly, September 25, 1886. Surveyed, 1887. Final confirmation, July 27, 1888.
5	Lawanth	Coast district, on the southern shore of Embley lagoon.	"	14	
6	Gleyka	Coast district, n the eastern shore of Actæon sound, half a mile from its head.	"	8	
7	Quace	Coast district on the Tsah-waw-ti-neuch river, at the head of Kingcome inlet.	"	432	
8	Alalco	Coast district, on the Ah-kwaw-ah-mish river, at the head of Wakeman sound.	"	293·20	
9	Grave-yard	Coast district, on the eastern shore of Wakeman sound, near its head.	"	4	
1	Telaise	Rupert district, 2½ miles north of Klaskino inlet, ½ mile northeast of May Day island	Klaskino	48	
2	Tsowenachs	Rupert district, ½ mile east of Anchorage island, Klaskino inlet.	"	55	Allotted by Commissioner O'Reilly, July 9, 1889. Surveyed 1892. Final confirmation, May 27, 1893.

3	Klaskish	Rupert district, ½ mile east of Shelter island, Klaskish inlet.	Klaskino	12½	
1	Tsawwati	Coast district, at the mouth of Tsawwati river, at the head of Knights inlet.	Knights Inlet, Tanockteuch and Ahwaheettlala bands.	401	
2	Keogh	Coast district, on the eastern shore of Glendale cove, Knights inlet.	" "	108·20	Allotted by Commissioner O'Reilly, October 2, 1886. Surveyed, 1887. Final confirmation, July 27, 1888.
3	Kwatse	Coast district, ½ mile south of Macdonald point, Knights inlet.	" "	51	
4	Grave-yard	Coast district, at Macdonald point, Knights inlet.	" "	5½	
1	Salmon River	Sayward district, at the mouth of Salmon river, Johnstone strait.	Laichkwiltach, Kahkahmatsis band.	329	
2	Homayno	Coast district, at the head of Heydon bay, Loughborough inlet.	We-way-akum and Kwoahkah bands.	38	
3	Loughborough	Coast district, on the eastern shore of Loughborough inlet, opposite Williams point.	" "	21	
4	Matlaten	Coast district on Cardero channel, opposite Greene point.	" "	96	
5	Matsayno	Coast district, on the eastern shore of Philipps arm, at its head.	" "	118½	Allotted by Commissioner O'Reilly, October 8, 1886. Surveyed, 1888. Final confirmation, May 18, 1889.
6	Saaiyouck	Coast district, on the north shore of Cardero channel, one mile west of Arran rapids.	" "	51½	
7	Village Bay	Sayward district, on the west shore of Village bay, Sutil channel.	We-way-akay band.	11	
8	Open Bay	Sayward district, on the northwest shore of Open bay, Valdez island.	" "	9	
9	Drew Harbour	Sayward district, Drew harbour, Valdez island.	" "	240½	
10	Cape Mudge	Sayward district, Cape Mudge, Valdez island.	" "	1,117½	2 acres transferred to Department of Marine and Fisheries for lighthouse purposes.
11	Campbell River	Sayward district, at the mouth of Campbell river, Discovery passage.	" "	350½	Allotted by Mr. Ashdown Green, under special authority from the Provincial and Dominion Governments, May 7, 1888. Surveyed, 1888. Final confirmation, May 18, 1889.
12	Quinsam	Sayward district, on the right bank of Quinsam river, about one mile from its confluence with Campbell river.	" "	287½	
1	Etsekin	Coast district, on the eastern shore of Havannah channel, opposite the northern end of Hull island.	Mahteelthpe	32½	
2	Keecekiltum, or Port Harvey.	Coast district, on the eastern shore of Port Harvey, Cracroft island, opposite the southern end of Mist island.	"	29	Allotted by Commissioner O'Reilly, October 5, 1886. Surveyed, 1887. Final confirmation, May 18, 1889.
3	Haylahte	Rupert district, at the mouth of Adams river, Johnstone strait.	"	47	
4	Port Neville, or Harkhom.	Coast district, on the northern shore of Port Neville, at its head.	"	36·70	
1	Kequesta	Coast district, on the northern shore of Seymour inlet, 10 miles from its mouth.	Nahkwockto	174	Allotted by Commissioner O'Reilly, July 31, 1882. Surveyed, 1889 Final confirmation, April 28, 1891.
2	Grave-yard	Coast district, a rock in Nugent sound, ¼ mile south of reserve No. 1.	"	0·16	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

KWAWKEWLTH AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
3	Pahas	Coast district, on the northern shore of Blunden harbour, Queen Charlotte sound.	Nahkwockto	98	
4	Mahpahkum	Coast district, at the northern extremity of Deserters island, Queen Charlotte sound.	"	19	
5	Ta-a-ack	Coast district, one of the Storm group of islands, Queen Charlotte sound.	"	34	
6	Saagoombahlah	Coast district, on the eastern shore of Schooner passage, Seymour inlet, ½ mile south of Nahkwockto rapids.	"	4½	Allotted by Commissioner O'Reilly, August 17, 1888. Surveyed 1889. Final confirmation, April 28, 1891.
7	Burial-ground	Coast district, an island in the centre of Nahkwockto rapids, Seymour inlet.	"	0·08	
8	"	Coast district, on the northern shore of Seymour inlet, ½ mile north of Nahkwockto rapids.	"	0·45	
9	Kwetahkis	Coast district, at the head of Nenahlmai lagoon, Seymour inlet.	"	10	
10	Owh-wis-too-a-wan	Coast district, at the mouth of Frederick sound, Seymour inlet, on its southern shore.	"	13	
11	Peneece	Coast district, at the head of Wigwam bay, Seymour inlet.	"	8	
12	Wawwat'l	Coast district, on the right bank of the Wawwat'l river, Seymour inlet, about 1½ mile from its mouth.	"	165	Allotted by Commissioner O'Reilly, August 17, 1888. Surveyed, 1889. Final confirmation, April 28, 1891.
13	Tsai-kwi-ee	Coast district, on the northern shore of Village bay, Mereworths sound.	"	11	
14	Ko-kwi-iss	Coast district, on the eastern shore of Alison sound, near its mouth.	"	15·8	
15	Kai-too-kwis	Coast district, on the northern shore of Alison sound, 3 miles north of reserve 14.	"	51	
16	Waump	Coast district, at the head of Alison sound	"	92·8	
17	Pel looth'l-kai	Coast district, at the head of Belize inlet	"	4	
1	Hope Island	Rupert district, Queen Charlotte sound.	Nahwitti	8552	
2	Semach	Rupert district, Sea Otter cove, Vancouver island.	"	6	
3	Ouchtun	Rupert district, at Cape Scott, Vancouver island.	"	12	Allotted by Commissioner O'Reilly, September 17, 1886. Surveyed, 1888. Final confirmation, May 18, 1889.
4	Nahwitti	Rupert district, at Cape Commerell, Vancouver island.	"	22	

	Glen-gla-ouch	Rupert district, at the southern end of Balak-lava island, Goletas channel.	"	14	
1	Alert Bay	Rupert district, Alert bay, Cormorant island	Nimkeesh	$46\frac{25}{100}$	Allotted by Commissioner O'Reilly, October 20, 1884. Surveyed, 1887. Final confirmation, July 27, 1888.
2	Burial-ground	Rupert district, Alert bay, 30 chains south of reserve No. 1.	"	$1\frac{87}{100}$	
3	Ches-la-kee	Rupert district, at the mouth of Nimkeesh river, Broughton strait.	"	$302\frac{87}{100}$	
4	Ar-ce-wy-ee	Rupert district, on the left bank of the Nimkeesh river, 2½ miles from its mouth.	"	$41\frac{30}{100}$	Allotted by Commissioner O'Reilly, September 21, 1886. Surveyed, 1887. Final confirmation, July 27, 1888.
5	O-tsaw-las	Rupert district, on the right bank of the Nimkeesh river, ½ mile from the outlet of Karmutsen lake.	"	$53\frac{25}{100}$	
1	Quattishe	Rupert district, near Turn point, at the southern end of Quatsino narrows, Quatsino sound.	Quatsino	228	
2	Toh-quo-eugh	Rupert district, two small islets in the west arm of Quatsino sound.	"	$1\frac{50}{100}$	
3	Pa-cat'l-lin-ne	Rupert district, on the west arm of Quatsino sound, two miles from its head.	"	9	
4	Kultah	Rupert district, at James point, on the eastern shore of Quatsino narrows.	"	41	
5	Cayilth	Rupert district, at the head of the southeast arm of Quatsino sound.	"	$11\frac{50}{100}$	Allotted by Commissioner O'Reilly, July 15, 1889. Surveyed, 1892. Final confirmation, June 20, 1893.
6	Cayuse	Rupert district, on the western shore of the southeast arm of Quatsino sound, west of the northern extremity of Long island.	"	94	
7	Teeta	Rupert district, on the western shore of the southeast arm of Quatsino sound, one mile southwest of Dog island.	"	$9\frac{50}{100}$	
8	Mah-te-nicht	Rupert district, in Koskeemo bay, Quatsino sound.	"	39	
9	Clatux	Rupert district, on the eastern shore of Koprino harbour, Quatsino sound.	"	73	
10	Fishery	Rupert district, on the northern shore of Koprino harbour, Quatsino sound.	"	111	
11	O-ya-kum-la	Rupert district, on the eastern shore of Forward inlet, Quatsino sound.	"	165	Allotted by Commissioner O'Reilly, July 15, 1886. Surveyed, 1892. Final confirmation, June 20, 1893.
12	Quatleyo	Rupert district, on the southern shore of Browning creek, Forward inlet.	"	6	
13	Grass Point	Rupert district, at Grass point, Winter harbour, a portion of section 3, and formerly within the townsite of 'Queenstown.'	"	$8\frac{50}{100}$	Conveyed by Captain John Thompson to Her Majesty the Queen, June 14, 1893.
14	Clienna	Rupert district, on the northern shore of Winter harbour, a portion of section 10.	"	50	Conveyed by McNiff, *et al.*, to Her Majesty the Queen, August, 1895.
15	Grave-yard	Rupert district, an island in Winter harbour, ten chains south of reserve No. 14.	"	3	Allotted by Commissioner O'Reilly, July 15, 1889. Surveyed, 1892. Final confirmation, June 20, 1893.
16	Ah-we-cha-ol-to	Rupert district, at the head of Winter harbour, on its southern shore.	"	74	

Schedule of Indian Reserves in the Dominion—*Continued*

KWAWKEWLTH AGENCY, BRITISH COLUMBIA—*Concluded.*

No.	Name.	Where Situated.	Tribe or band.	Area, Acres.	Remarks.
1	Wyclese	Coast district, on the southern shore of Smith's inlet, about 20 miles from its mouth, and on the left bank of the Sammo river.	Quawshelah	551	The right to fish in the Sammo river for 2 miles above tidal water is reserved for these Indians.
2	Nekite	Coast district, on the right bank of the Nekite river, at the head of Smith's inlet.	"	165	Allotted by Commissioner O'Reilly, August 3, 1882. Surveyed, 1889. Final confirmation, April 28, 1891.
1	Karlukwees	Coast district, on the southern shore of Turnour island, Beware passage.	Turnour Island	26·75	Allotted by Comm'r. O'Reilly, Oct. 2, 1886. Surveyed, 1887. Final confirmation, July 27, 1888.
1	Mahmalillikullah	Coast district, on the western shore of Village island, Elliot passage.	Village Island	434·25	
2	Meetup	Coast district, at the head of Viner sound	"	15·75	
3	Ahta	" at the mouth of Ahta river, at the head of Bond sound.	"	17·50	Allotted by Comm'r. O'Reilly, Sept. 29, 1886. Surveyed, 1888.
4	Kakweken	Coast district, at the mouth of Kakweken river, at the head of Thompson sound.	"	10	Final confirmation, July 27, 1888.
5	Dead Point	Coast district, at Dead point, Harbledown island.	"	97	

NORTHWEST COAST AGENCY, BRITISH COLUMBIA.

1	Bella Bella	Coast district, on Campbell island, in McLaughlin bay.	Bella Bella	1,625	
1A	Burial-ground	Coast district, on Denny island, on eastern shore of Plumper channel, opposite reserve No. 1.	"	17	
2	Hoonees	Coast district, on the western shore of Roscoe inlet, near its mouth.	"	21	
3	Quartcha	Coast district, at the mouth of Quartcha river, Roscoe inlet.	"	32	
4	Noota	Coast district, at the mouth of Noota river, near the head of Roscoe inlet.	"	16·50	
5	Clatse	Coast district, at the mouth of Clatse river, Roscoe inlet.	"	222	
6	Elcho	Coast district, on the left bank of Elcho river, Dean canal.	"	80	Allotted by Comm'r. O'Reilly, Aug. 25, 1882. Surveyed, 1888. Final confirmation, May 18, 1889.
7	Kisameet	Coast district, on King island, Fisher channel, at the mouth of Kisameet river.	"	13	

8	Howeet	Coast district, at the mouth of Howeet river, Lama passage, Hunter island.	"	610	
9	Kunsoot	Coast district, at the mouth of Kunsoot river, Gunboat passage, Denny island.	"	95	
10	Jajustus	Coast district, on northern shore of Denny island, Gunboat passage.	"	16·50	
11	Werkinellek	Coast district, Goose islands, about 25 miles southwest of Bella Bella.	"	63	
12	Yellertlee	Coast district, on the Goose islands, about ½ mile northeast of reserve No. 11.	"	161·50	
	Bella Coola	Coast district, at the head of the North Bentinck arm, Burke's channel.	Bella Coola	3,363	
2	Nooseseck	Coast district, at the mouth of Nooseseck river, 1 mile north of Loiyence point, North Bentinck arm.	"	13	Allotted by Comm'r. O'Reilly, Aug. 11, 1882. Surveyed, 1888.
3	Talcomy	Coast district, on the Talcomy river, near the head of South Bentinck arm.	"	500	
4	Kwatlena	Coast district, on the Kwatlena river, about 6 miles east of Bentinck arm.	"	131	
1	Kemsquit	Coast district, at the mouth of the Kemsquit river, Dean canal.	Kemsquit	502	Allotted by Comm'r. O'Reilly, August 14, 1882. Surveyed, 1888. Final confirmation, May 18, 1889.
2	Chatscah	Coast district, on the Chatscah river, at the head of Dean canal.	"	428	
1	Kitasoo	Coast district, on Swindle island, in Trout bay, Klemtoo passage.	Kitasoo	812	
2	Canoona	Coast district, on Princess Royal island, on the western shore of Graham reach.	"	542	The Kitasoo Indians have the privilege of fishing in the Canoona river for a distance of two miles from its mouth.
1	Kitimat	Coast district, on the left bank of Klaklalisha river, Douglas channel, ½ mile from its mouth.	Kitimat	467	
2	"	Coast district, on the eastern shore of Douglas channel, 3 miles south of reserve No. 1.	"	386	Allotted by Comm'r. O'Reilly, July 24, 1889. Surveyed, 1891. Final confirmation, May 4, 1892.
3	Wawelth	Coast district, on the eastern shore of Douglas channel, one mile south of reserve No. 2.	"	41½	
4	Tahla	Coast district, at the head of Kildala arm, Douglas channel.	"	12½	
1	Kitkahta	Coast district, on the northern shore of Kitkahta bay, Douglas channel.	Kitkahta	278	
2	Burial-ground	Coast district, on the left bank of the Quaal river, Kitkahta bay, at its mouth.	"	33	Allotted by Comm'r. O'Reilly, July 22, 1889. Surveyed, 1891. Final confirmation, May 4, 1892.
3	Quaal	Coast district, on the right bank of Quaal river, one mile from its mouth.	"	71½	
4	Kulkayu	Coast district, on the southern shore of Hartly bay, Douglas channel.	"	323	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

NORTHWEST COAST AGENCY, BRITISH COLUMBIA —*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	Dolphin Island	Coast district, between Hecate strait and Ogden channel.	Kitlathla	3,848	
2	Grassy Islet	Coast district, one mile north of Dolphin island.	"	1·10	Allotted by Comm'r. O'Reilly, September 21, 1882. Surveyed, 1891 2. Final confirmation, June 30, 1893.
3	Kumowadah	Coast district, at the head of Lowe inlet, Grenville channel.	"	184	
4	Sand Island	Coast district, 1 mile north of reserve No. 1.	"	5	Allotted by Commissioner O'Reilly, July 10, 1891. Surveyed, 1891-2. Final confirmation, June 30, 1893.
5	Klapthlon	Coast district, 1 mile northwest of Calvert point, Grenville channel.	"	112	
5A	"	Coast district, an addition to reserve No. 5, on the west.	"	126	Allotted by Comm'r. O'Reilly, September 6, 1893. Surveyed, 1901. Final confirmation, Dec. 10, 1901.
6	Pa-aat	Coast district, on the eastern shore of Pitt island, 2 miles south of False Stuart anchorage.	"	15	
7	Tsimtack	Coast district, on Pitt island, on the western shore of Union passage.	"	27	
8	Toowartz	Coast district, on the southern shore of Pitt island.	"	52	
9	Citeyats	Coast district, on the southern extremity of Pitt island, 2 miles north of Steep point.	"	36½	Allotted by Commissioner O'Reilly, July 10, 1891. Surveyed, 1891-2. Final confirmation, June 30, 1893.
10	Kitlawaoo	Coast district, on the eastern shore of Banks island, 2½ miles south of Gale point.	"	6	
11	Kceeha	Coast district, on the eastern shore of Banks island, 1 mile north of Gale point.	"	4	
12	Kooryet	Coast district, on the eastern shore of Banks island, 4 miles north of Gale point.	"	13½	
13	Clowel	Coast district, on the western shore of Pitt island and southern shore of Minktrap cove.	"	15	The allotment of reserves for this band not yet been completed.
14	Sheganny	Coast district, on the west coast of Pitt island, at the head of Minktrap cove.	Kitlathla	27	
15	Tsimlairen	Coast district, on the west coast of Pitt island, east of Anger island.	"	39½	
16	Keswar	Coast district, on the west coast of McCauley island, 3 miles south of Hankin point.	"	12½	Allotted by Commissioner O'Reilly, July 10, 1891. Surveyed, 1891-2. Final confirmation, June 30 1893.
17	Keyarka	Coast district, on the northeastern shore of Banks island, 2 miles east of End hill.	"	21	
18	Kul	Coast district, on the southern shore of	"	95	

		Bonilla island, Hecate strait.			
1	Wekellals	Coast district, on the banks of the Kitlup river, Gardners channel, about 4 miles from its mouth.	Kitlope	215	Allotted by Commissioner O'Reilly, July 25, 1889. Surveyed, 1891. Final confirmation, May 4, 1892
2	Kitlope	Coast district, on the north shore of Gardners channel, 1 mile from its head.	"	112	
3	Kemano	Coast district, on the north shore of Gardners channel, ½ mile south of Kemano river.	"	25½	
1	Kitselas	Coast district, at Kitselas canyon, on the Skeena river.	Kitselas	1,470	Allotted by Commissioner O'Reilly, Sept. 18, 1893.
2	Chimdimash	Coast district, on Skeena river, 4 miles above the canyon.	"	240	Allotted by Commissioner O'Reilly, Oct. 6, 1891.
3	Ikshenigwolk	Coast district, on Skeena river, 12 miles above the canyon.	"	90	
4	Kshish	Coast district, on Skeena river, 3 miles below the canyon.	"	130	
5	Zaimoetz	Coast district, on Skeena river 4 miles below the canyon.	"	323	
6	Kulspai	Coast district, on Skeena river, 9 miles below the canyon.	"	17	
7	Ketoneda	Coast district, on Skeena river, 17 miles above the canyon.	"	145	Allotted by Commissioner O'Reilly, Sept. 18, 1893. Surveyed, 1901.
2A	Chimdimash	Coast district, on Skeena river, adjoining reserve No. 2.	"	370	
4A	Kshish	Coast district, on Skeena river, adjoining reserve No. 4.	"	490	
1	Kitsumkelum	Coast district, on the right bank of Skeena river, at the mouth of Kitsumkelum river.	Kitsumkelum	1,040	Allotted by Commissioner O'Reilly, Oct. 10, 1891. Surveyed, 1901.
2	Fishery	Coast district, on the right bank of the Kitsumkelum river, 5 miles from its mouth.		133	
3	Zimagord	Coast district, on the right bank of Skeena river, 6 miles below Kitsumkelum.		73	
	Port Essington	Coast district, on the left bank and near the mouth of the Skeena river.	Kitselas, Kitsumkelum and others Indians.	Not surveyed.	Granted in 1901 by Robert Cunningham; in the event of the Indian tribes dying out to revert to his heirs. (File 199522).
1	Kokyet	Coast district, on Yeo island, at the mouth of Ellerslie channel.	Kokyet	185	Allotted by Commissioner O'Reilly, August 29, 1882. Surveyed, 1888. Final confirmation, May 18, 1889.
2	Grief Island	Coast district, in Ellerslie channel, about 10 chains west of the village on reserve No. 1.	"	75	
3	Kyarti	Coast district, an island in Ellerslie channel, 1½ miles north of the village on reserve No. 1.	"	1·25	
4	Neekas	Coast district, at the head of Neekas cove, Ellerslie channel.	"	11	
5	Tankeah	Coast district, at the head of Berry harbour, Seaforth channel, Millbank sound.	"	32	
6	Koqui	Coast district, on Dufferin island, at the mouth of Gale creek, Seaforth channel.	Lakelse	95	
1	Killutsal	Coast district, on the left bank of Lakelse river, near its confluence with the Skeena.	"	156	Allotted by Com'r O'Reilly, Sept. 18, '93. Not yet surveyed. The allotments for this band not yet completed.

SCHEDULE of Indian Reserves in the Dominion—*Continued*

NORTHWEST COAST AGENCY, BRITISH COLUMBIA —*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	Massett	Coast district, at the mouth of Massett inlet, Queen Charlotte islands.	Massett	729	
2	Hiellen	Coast district, on the right bank of Hiellen river, at its mouth.	"	70·50	
3	Yagan	Coast district, on Chatham sound, 12 miles east of Massett inlet.	"	86	
4	Lanas	Coast district, on the left bank of Yakoun river, 1½ miles from its mouth.	"	192·50	The Massett Indians have the privilege of fishing in the Yakoun river for a distance of 1 mile upstream from the southeastern corner of reserve No. 4.
5	Satunquin	Coast district, on the left bank of Yakoun river, at its mouth	"	9	
6	Ain	Coast district, at the mouth of Ain river, Massett inlet.	"	164	Allotted by Commissioner O'Reilly, July 13, 1882. Surveyed, 1887. Final confirmation, July 27, 1888.
7	Yan	Coast district, at the western entrance to Massett inlet.	"	264	
8	Meagwan	Coast district, 6 miles west of the mouth of Massett inlet.	"	19	
9	Kose	Coast district, on the banks of Naden river, Virago sound, 2½ miles from its mouth.	"	9	
10	Naden	Coast district, at the mouth of Naden river, Virago sound.	"	27	
11	Kung	Coast district, at the head of Virago sound.	"	71	
12	Daningay	Coast district, on the western shore of Virago sound.	"	21	
13	Yatze	Coast district, 2 miles west of Virago sound.	"	45	Allotted by Commissioner O'Reilly, July 13, 1882. Surveyed, 1887. Final confirmation, July 27, 1888.
14	Jalun	Coast district, about 8 miles south of North island, on the right bank of Jalun river, at its mouth.	"	17·50	The Massett Indians have the privilege of fishing in the Jalun river for a distance of 1 mile above tidal water.
15	Kioosta	Coast district, on Parry passage, at the northwestern extremity of Graham island.	"	101	
16	Tatense	Coast district, on North island, in Parry passage.	"	16	
1	Kitlacdamax	Cassiar district, on the banks of the Nass river, about 45 miles from its mouth.	Nass River	3,078	Allotted by Commissioner O'Reilly, October 20, 1881. Surveyed, 1886. Final confirmation, May 4, 1892.
1A	"	Cassiar district, an extension of reserve No. 1 on its western boundary.	"	640	Allotted by Commissioner O'Reilly, Sept. 8, 1888. Surveyed, 1886. Final confirmation, May 4, 1892.
2	Tsimmanweenelist	Cassiar district, on the banks of the Nass river, half a mile above the Grease trail.	"	81·60	The Nass river Indians have the privilege of fishing in the Nass for a distance of two miles upstream from reserve No. 2.

3	Seaks	Cassiar district, an island at the confluence of the Seaks river with the Nass.	"	40·80	The Nass river Indians have the privilege of fishing in the Seaks river for a distance of one mile from its mouth.
4	Shumarl	Cassiar district, on the right bank of the Nass river, at the mouth of Shumarl creek.	"	178	Allotted by Commissioner O'Reilly, Oct. 20, 1881. Surveyed, 1886. Final confirmation, May 4, 1892.
5	Fishery	Cassiar district, on an island in the Nass river opposite the southwestern corner of reserve No. 4.	"	17·50	The Nass river Indians have the privilege of fishing in the slough, the southern boundary of this reserve, the length of the reserve.
6	Amatal	Cassiar district, on the left bank of Nass river to the west of reserve No. 5.	"	78·50	The Nass river Indians have the privilege of fishing in the Nass the entire length of this reserve.
7	Kitwillucshilt	Cassiar district, on the banks of the Nass river at the Lava beds.	"	493	The Nass river Indians have the privilege of fishing on the left bank of the Nass from the mouth of Andegulay slough half a mile up stream.
8	Andegulay	Cassiar district, on the left bank of the Nass, five miles above Lachkaltsap.	"	257·60	Allotted by Commissioner O'Reilly, Sept. 3, 1888. Surveyed, 1886. Final confirmation, May, 4, 1892.
8A	"	Cassiar district on the right bank of the Nass, immediately opposite reserve No. 8.	"	284	
9	Lachkaltsap or Grenville	Cassiar district, on the banks of the Nass at the head of tidal water.	"	3,955	The Nass river Indians have the privilege of fishing within the limits of this reserve.
10	Stony Point	Cassiar district, on the right bank of the Nass river at Stony point.	"	347·50	
11	Black Point	Cassiar district, on the right bank of the Nass river at Black point.	"	40·50	Allotted by Commissioner O'Reilly, Oct. 20, 1881. Surveyed, 1886. Final confirmation, May 4, 1892.
12	Lachtesk	Coast district, on the left bank of the Nass, twelve miles from its mouth.	"	299	
13	Red Cliff	Coast district, on the right bank of the Nass river, nine miles from its mouth.	"	773·50	The Nass river Indians have the privilege of fishing in the Nanook river for a distance of a quarter of a mile from its mouth.
14	Kincolith	Coast district, on the right bank of the Nass river, at its mouth.	"	1,1[illegible]0	
14A	"	Coast district, an extension of reserve No. 14, on the west.	"	410	Allotted by Commissioner O'Reilly, Sept. 8, 1888. Surveyed, 1890. Final confirmation, May 4, 1892.
15	Kinnamax	Coast district, on the right bank of Kinnamax river, nine miles north of Fort Simpson.	"	4	Allotted by Commissioner O'Reilly, Oct. 20, 1881 Surveyed, 1890. Final confirmation, May 4, 1892.
16	Talahaat	Coast district, on the banks of the Kinnamax river, two and a-half miles from its mouth.	"	160	The Nass river Indians have the privilege of fishing within the limits of reserve No. 16.
17	Georgie	Coast district, on the eastern shore of Portland canal, near Blue point.	"	71	
18	Kullan	Coast district, on the western shore of Portland canal, one mile from its head.	"	108	
19	Scamakounst	Coast district, on the eastern shore of Portland canal at its head, at the mouth of Bear river.	"	58·50	
20	Kinmelit	Coast district, in Salmon cove, on the western shore of Observatory inlet.	"	48·50	
21	Slooks	Coast district, on Dawkin's point, on the eastern shore of Observatory inlet.	"	17	Allotted by Commissioner O'Reilly, Sept. 8, 1888. Surveyed, 1890. Final confirmation, May 4, 1892.
22	Staqoo	Coast district, on the eastern shore of Observatory inlet, four miles north of reserve No. 21.	"	47·50	
23	Ktsinet	Coast district, on Perry bay, on the eastern shore of Observatory inlet,	"	271	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

NORTHWEST COAST AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
24	Gitzault	Coast district, on the western shore of Alice arm, Observatory inlet, at its head.	Nass River	202·50	
25	Witzimagon	Coast district, on the western shore of Hastings arm, Observatory inlet, opposite Larcom island.	"	950	
26	Tackuan	Coast district, on the western shore of Hastings arm, Observatory inlet, two miles north of reserve No. 25.	"	500·50	
27	Kshwan	Coast district, at the head of Hastings arm, Observatory inlet, on the right bank of Kshwan river.	"	133·50	Allotted by Commissioner O'Reilly, Sept. 8, 1888. Surveyed, 1890. Final confirmation, May 4, 1892.
28	Scowban	Coast district, on the eastern shore of Observatory inlet, two and a-half miles north of North point.	"	78·50	
29	Zaulzap	Cassiar district, on the banks of the Nass, about half a mile below reserve No. 7.	"	578	
30	Dachlabah	Cassiar district, on the right bank of the Nass, one mile west of reserve No. 8A.	"	151	Allotted by Commissioner O'Reilly, Sept. 29, 1896. Surveyed, 1896. Final confirmation, Dec. 10, 1896.
1	Katit	Coast district, on the banks of Owekano river, Rivers inlet.	Owekano	1,628	
2	Kiltala	Coast district, on the right bank of the Kiltala river, Rivers inlet.	"	121	Allotted by Commissioner O'Reilly, August 7, 1882. Surveyed, 1889. Final confirmation, April 28, 1891.
3	Cockmi	Coast district, on an island at the mouth of Rivers inlet.	"	11·75	
1	Skidegate	Coast district, at the northern entrance to Skidegate inlet, Queen Charlotte islands.	Skidegate	851	
2	Skaigha	Coast district, on Skidegate inlet, about seven miles north of reserve No. 1.	"	62	
3	Deena	Coast district, at the head of South bay, Skidegate inlet.	"	119	The Skidegate Indians have the privilege of fishing in the Deena river for a distance of one mile above tidal water
4	Khrana	Coast district, at the eastern end of Maude island, Skidegate inlet.	"	210	
5	Lagins	Coast district, on the left bank of Lagins river, at the head of Long arm, Skidegate inlet.	"	40	Allotted by Comm'r. O'Reilly, July 28, 1882. Surveyed, 1887. Final confirmation, July 27, 1888.
6	Kaste	Coast district, in Copper bay, at the mouth of the Kaste river.	"	38	The Skidegate Indians have the privilege of fishing in the Kaste river for a distance of one mile above tidal water.
7	Cumshewas	Coast district, near the northern entrance to	"	56	

		Cumshewas harbour, Queen Charlotte islands.			
8	Skedance	Coast district, at the southern entrance to Cumshewas harbour.	"	169	
9	Tanoo	Coast district, at the eastern end of Tanoo island, 45 miles south of Skidegate inlet.	"	65	
1	Fort Simpson	Coast district, in Port Simpson, on the Tsimpsean peninsula.	Tsimpsean, Pt. Simpson	57	Allotted by Comm'r. O'Reilly, February 26, 1884. Surveyed, 1887. Final confirmation, January 26, 1892.
2	Tsimpsean reserve	Coast district, on the Tsimpsean peninsula.	" N. ½ " S. ½ Metlakatla	57,742	
3	Wilnaskancaud	Coast district, on the eastern shore of Kaien island, eight miles southeast of Metlakatla.	" Metlakatla	6	
4	Shoowahtlans	Coast district, on the western shore of the Tsimpsean peninsula, east of Metlakatla.	" "	18	The Tsimpsean Indians have the privilege of fishing in the Cloyah river for a distance of 1½ miles from its mouth.
5	Cloyah	Coast district, on the western shore of the Tsimpsean peninsula, at the mouth of the Cloyah river.	" "	77	
6	Willaclough	Coast district, on the right bank of the Skeena river, at Inverness.	" Pt. Simpson and Metlakatla in com.	33	Allotted by Comm'r. O'Reilly, October 29, 1881. Surveyed, 1887. Final confirmation, January 26, 1892.
7	Point Veiteh	Coast district, on the left bank of the Skeena river, two miles west of Port Essington.	" "	16	
8	Khyex	Coast district, on the right bank of the Skeena river, at the mouth of the Khyex river.	" "	46	
9	Kilcutseen	Coast district, on the left bank of the Skeena river, about six miles east of Port Essington.	" "	18	
10	Khtahda	Coast district, on the left bank of the Skeena river, about 7 miles east of Port Essington, at the mouth of Khtahda river.	" "	7	Allotted by Comm'r. O'Reilly, Oct. 29, 1881. Surveyed, 1887.
11	Scuttsap	Coast district, on the left bank of the Skeena river, at the head of tidal water.	" "	9	Final confirmation, Jan. 26, 1892.
12	Tymgowzan	Coast district, on Compton island, at the mouth of Works canal.	" Pt. Simpson	73	
13	Ensheshese	Coast district, on the left bank of the Ensheshese river, Works canal.	" "	45	
14	Wilskaskammel	Coast district, on the east bank of the north fork of Works canal, 2 miles from the forks.	" "	8	
15	Toon	Coast district, on the right bank of Toon river, at the head of the north fork of Works canal.	" "	20	The Tsimpsean Indians have the privilege of fishing on the Toon river for a distance of 2 miles up stream from the head of tidal waters.
16	Lachmach	Coast district, on the right bank of Lachmach river, at the head of the south fork of Works canal.	" "	27	Allotted by Comm'r. O'Reilly, Sept. 13, 1882. Surveyed, 1887. Final confirmation, Jan. 26, 1892.
17	Spakels	Coast district, on the eastern shore of Somerville island, in Steamer passage, opposite Khutzeymateen inlet.	" "	19	
18	Birnie Island	Coast district, 2½ miles north of Fort Simpson.	" "	114	

SCHEDULE of Indian Reserves in the Dominion.—*Continued*

NORTHWEST COAST AGENCY, BRITISH COLUMBIA *Concluded.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
19	Finlayson Island	Coast district, 1 mile west of Fort Simpson.	Tsimpsean, Pt. Simpson.	1,589	Allotted by Comm'r. O'Reilly, Sept. 13, 1882. Surveyed, 1887. Final confirmation, Jan. 26, 1892.
20	Burnt Cliff Island	Coast district, in Pearl harbour, 4 miles south of Fort Simpson.	" "	67	
21	Tugwell Island	Coast district, 1½ miles west of Metlakatla.	" Metlakatla	312	
22	Dasbken	Coast district, on the northeast shore of Smith's island, on the north passage, Skeena river.	" Pt. Simpson and Metlakatla.	7 20	
23	Kshaoom	Coast district, on the northwest shore of De Horsey island, on the north passage, Skeena river.	" "	5·50	Allotted by Comm'r. O'Reilly, Sept. 11, 1888. Surveyed, 1891. Final confirmation, Jan. 26, 1892.
24	Meanlaw	Coast district, at Mowitch point, on the right bank of the Skeena river.	" "	7·50	

WEST COAST AGENCY, BRITISH COLUMBIA.

1	Acous	Rupert district, at the entrance to Ououkinsh inlet, on its western shore.	Checkleset	100	
2	Burial-ground	Rupert district, an island ½ mile southeast of reserve No. 1.	"	2	
3	Mahope	Rupert district, in Battle bay, Ououkinsh inlet.	"	40	
4	Hisnit	Rupert district, on the western shore of Ououkinsh inlet, 1½ miles from its head.	"	15	Allotted by Comm'r. O'Reilly, July 8, 1889. Surveyed, 1892.
5	Ououkinsh	Rupert district, on the eastern shore of Ououkinsh inlet, at its head.	"	10	Final confirmation, May 27, 1893.
6	Upsowis	Rupert district, between the entrances to Ououkinsh and Malksope inlets.	"	61	
7	Malksope	Rupert district, on the northern shore of Malksope inlet, at its head.	"	30	
1	Opitsat	Clayoquot district, on the southwestern shore of Meares island, Clayoquot sound.	Clayoquot	180	
2	Echachis	Clayoquot district, on island in Clayoquot sound, at the entrance to Broken and Templar channels.	"	41	
3	Esowista	Clayoquot district, in Long bay, about one mile east of Schooner cove.	"	17	
4	Kootowis	Clayoquot district, southeast of Indian island, Tofino inlet, Clayoquot sound.	"	37	

5	Okeamin	Clayoquot district, on the right bank of Kennedy river, Tofino inlet at its mouth	"		24	
6	Clayoqua	Clayoquot district, at the head of the north-west arm of Kennedy lake.	"		110	
7	Winehe	Clayoquot district, at the head of the north-east arm of Kennedy lake.	"		40	
8	Ilthpaya	Clayoquot district, on the right bank of Kennedy river at the head of the rapids.	"		$3\frac{50}{100}$	
9	Onadsilth	Clayoquot district, at the head of Deer creek, Tofino inlet.	"		45	
10	Eelseuklis	Clayoquot district, at the head of Tranquil creek, Tofino inlet.	"		40	
11	Yarksis	Clayoquot district, on the eastern shore of Vargas island, Clayoquot sound.	"	Kelsemarth'd	103	
12	Cloolthpich	Clayoquot district, on the western shore of Meares island, Clayoquot sound.	"	"	59	
13	Quortsowe	Clayoquot district, at the head of Warm bay, Clayo quot sound.	"	"	36	
14	Oinimitis	Clayoquot district, on the eastern shore of Bedwell sound at its head.	"	"	25	
15	Marktosis	Clayoquot district, at the head of Matilda creek, Flores island, Clayoquot sound.	"	Ahousaht band	260	Allotted by Commissioner O'Reilly, June 24, 1889. Surveyed, 1893.
16	Ahous	Clayoquot district, at the southern end of Open bay, Vargas island, Clayoquot sound.	"	"	34	Final confirmation, May 16, 1894.
17	Chetarpe	Clayoquot district, on the shore of Clayoquot sound, west of Catface mountain.	"	"	35	
18	Sutaquis	Clayoquot district, half a mile west of Crane island.	"	"	27	
19	Wahous (fisbery)	Clayoquot district, at the mouth of Trout river, Cypress bay, Clayoquot sound.	"	"	143	
20	" (village)	Clayoquot district, on the northern shore of Cypress bay, Clayoquot sound.	"	"	34	
21	Tequa	Clayoquot district, at the head of Bawden bay, Herbert arm, Clayoquot sound.	"	"	6	
22	Peneetle	Clayoquot district, at the head of White Pine cove, Herbert arm, Clayoquot sound.	"	"	95	
23	Moyehai	Clayoquot district, on the western shore of Herbert arm, Clayoquot sound.	"	"	13	
24	Seektukis	Clayoquot district, on the eastern shore of North arm, Clayoquot sound.	"	"	34	
25	Watta	Clayoquot district, at the head of Shelter arm, Clayoquot sound.	"	"	12	
26	Wappook	Clayoquot district, on the northern shore of Shelter arm, Clayoquot sound, and north of Obstruction island.	"	"	11	
27	Openit	Clayoquot district, on the western shore of Sydney inlet, Clayoquot sound, about one mile north of Refuge cove.	"	Manhauset band	77	
28	Tootoowiite-na	Clayoquot district, on the eastern shore of Sydney inlet.	"	"	21	

Schedule of Indian Reserves in the Dominion—*Continued*

WEST COAST AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
29	Kishnacous	Clayoquot district, at the head of Sydney inlet.	Clayoquot, Manhauset band.	34	
1	Nuchatl	Nootka district, an island at the entrance to Esperanza inlet.	Esperanza Inlet, Nuchatl-itz.	16	
2	"	Nootka district, on western shore of Nootka island, south of reserve No. 1.	" "	57	
3	Ahpukto	Nootka district, on western shore of Port Langford, near its head.	" "	7	
4	Opemit	Nootka district, on western shore of Nootka island, ½ mile north of reserve No. 1.	" "	16	
5	Shoomart	Nootka district, at the head of Inner basin, Nootka sound.	" "	21	
5	Owossit-sa	Nootka district, one mile southeast of Centre island, Esperanza inlet.	" "	8½	
7	Ocluceje	Nootka district, at the head of Espinoza arm, Esperanza inlet.	" "	33	
8	Occosh	Nootka district, on the western shore of Port Eliza, Esperanza inlet, at its head.	" "	31	Allotted by Comm'r. O'Reilly, July 2, 1889. Surveyed, 1893. Final confirmation, May 16, 1894.
9	Chiseuquis	Nootka district, on the eastern shore of Catala island.	" "	19	
10	Oke	Nootka district, on the northern shore of Esperanza inlet, three miles northeast of Centre island.	Esperanza Inlet, E-hatisaht band.	32	
10A	Grave-yard	Nootka district, on the northern shore of Esperanza inlet, ½ mile west of reserve No. 10.	" "	2	
11	Ehatis	Nootka district, on the western shore of Zeballos arm, at its head.	" "	40	
12	Chenahkint	Nootka district, on the eastern shore of Queen's cove, Port Eliza, at its entrance.	" "	56	
13	Tatchu	Nootka district, at Tatchu point, 5½ miles west of the entrance to Esperanza inlet.	" "	13	
1	Hesquiat	Clayoquot district, at the entrance to Hesquiat harbour, on its western shore.	Hesquiat	222	
2	Homais	Clayoquot district, at the entrance to Nootka sound, on the eastern shore.	"	89	
3	Teahmit	Clayoquot district, on the western shore of Hesquiat harbour.	"	107	Allotted by Comm'r. O'Reilly, June 26, 1886. Surveyed, 1893. Final confirmation, May 16, 1894.
4	Maahpe	Clayoquot district, on the northwestern shore of Hesquiat harbour.	"	159	

5	Iusuk	Clayoquot district, on the eastern shore of Hesquiat harbour.	Hesquiat	29	
1	Village Island	Rupert district, near the western entrance to Kyuquot sound.	Kyuquot	118	
2	Mission Island	Rupert district, the eastern portion of Mission island, ½ mile east of reserve No. 1.	"	73	
3	Ahnacinnit	Rupert district, two islands situated ¼ mile northeast of reserve No. 1.	"	11	
4	Granite Island	Rupert district, ¾ mile northwest of reserve No. 1.	"	215	
5	Yakats	Rupert district, on the eastern shore of Clanni-nick harbour, Kyuquot sound.	"	4½	
6	Houpsitas	Rupert district, north of Walter's island. Kyuquot sound.	"	29	
7	Chamiss	Rupert district, on the northern shore of Chamiss bay, Kokshittle arm.	"	13	
8	Kayouk	Rupert district, on the western shore of Easy creek, Kokshittle arm.	"	7	
9	Kashittle	Rupert district, on the western shore of Kokshittle arm, at its head.	"	12½	Allotted by Comm'r. O'Reilly, July 6, 1889. Surveyed, 1892. Final confirmation, May 16, 1894.
10	Kaoowinch	Rupert district, on the eastern shore of Kokshittle arm, opposite Easy creek.	"	20	
11	Tahsish	Rupert district, at the head of Tahsish arm, Kyuquot sound.	"	21	
12	Artlish	Rupert district, on the eastern shore of Tahsish arm, 2 miles from its head.	"	18	
13	Kaouk	Rupert district, at the head of Fair harbour, Tahsish arm.	"	13	
14	Markale	Rupert district, situated on an isthmus between the western head of Fair harbour and Pinnace channel, Kyuquot sound.	"	13	
15	Amai	Rupert district, at the head of Deep inlet, Kyuquot sound.	"	30½	
16	Machta	Rupert district, on Shingle point at the entrance to Narrow Gut creek.	"	9	
1	Ahuk	Barclay district, on the eastern shore of Ahuk lake, about 3½ miles northwest of the outlet of Nitinat lagoon.	Nitinat	132	
2	Tsuquanah	Barclay district, on the seacoast about 1 mile west of the outlet of Nitinat lagoon.	"	235	
3	Wyah	Renfrew district, on the eastern shore of the outlet of Nitinat lagoon.	"	132	
4	Cla-oose	Renfrew district, at the mouth of the Suwany river, on its right bank.	"	248½	
4A	Burial-ground	Renfrew district, on the left bank of the Suwany river, at its mouth.	"	9·30	
5	Sarque	Renfrew district, on the right bank of the Suwany river, 2 miles from its mouth.	"	25·80	
6	Carmanah	Renfrew district, adjoining the Carmanah point lighthouse reserve on the east.	"	158½	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

WEST COAST AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
7	Iktuksasuk	Barclay district, on the northern shore of Nitinat lagoon, 1 mile from its outlet.	Nitinat	168	
8	Homitan	Barclay district, on the northern shore of Nitinat lagoon, 4½ miles from its head.	"	50	
9	Oyees	Renfrew district, on the southern shore of Nitinat lagoon. 7½ miles from its head.	"	104½	Allotted by Comm'r. O'Reilly, August 7, 1890. Surveyed, 1892. Final confirmation, May 16, 1894.
10	Doobah	Renfrew district, on the southern shore of Nitinat lagoon, 6 miles from its head.	"	13	
11	Malachan	Renfrew district, on the southern shore of Nitinat lagoon, 1 mile from its head.	"	66	
12	Helo	Renfrew district, near the mouth of Nitinat river, partly in section 6, township 1.	"	77	
13	Opatseeah	Renfrew district, at the mouth of Nitinat river, part of western half of section 5, township 1,	"	71	
14	Wokitsas	Renfrew district, on the right bank of Nitinat river, a portion of northwest ¼, section 9, township 1.	"	40	
15	Chuchummisapo	Renfrew district, on the left bank of Nitinat river, a portion of northeast ¼, section 22, township 1.	"	92	
16	Saouk	Renfrew district, on the right bank of Nitinat river, being portions of sections 25 and 36, township 1, and section 6, township 2.	"	175	
1	Yuquot	Nootka district, Friendly cove, Nootka sound.	Nootka	210	
2	Tsarksis	Nootka district, on southern shore of Nootka island, about 3 miles east of Bajo point.	"	81	
3	Aass	Nootka district, on southern shore of Nootka island, at Bajo point.	"	14	
4	Nesuk	Nootka district, on eastern shore of Tlupana arm, one mile east of Separation saddle.	"	5	
5	Montcha	Nootka district, on eastern shore of Tlupana arm, north of Separation saddle.	"	15	
6	Suewoa	Nootka district, at northern extremity of Head bay, Tlupana arm.	"	36	
7	Hisnit	Nootka district, at the head of Deserted creek, Tlupana arm.	"	11	
8	Hoiss	Nootka district, 1 mile northeast of Canal island, Nootka sound.	"	41	

9	Coopte	Nootka district, to the east of Narrow island, on the eastern shore of Tahsis canal, Nootka sound.	"	35	Allotted by Commissioner O'Reilly, June 28, 1889. Surveyed, 1893. Final confirmation, May 16, 1894
10	Tsowwin	Nootka district, on the eastern shore of Tahsis canal, about 8 miles from its head.	"	34	
11	Tahsis	Nootka district, on the eastern shore of Tahsis canal, at its head.	"	42	
12	Ahaminaquus	Nootka district, at the mouth of Gold river on its right bank, north shore Muchalat arm.	" Matchitlacht band.	39	
13	Matchlee	Nootka district, at the head of Muchalat arm, on its northern shore.	" Matchitlacht band.	12½	
14	Hleepte	Nootka district, on the northern shore of Williamson passage, Muchalat arm.	" "	10	
15	Cheeshish	Nootka district, on Nootka sound, northeast of Bligh island.	" "	29	
16	Mooyah	Clayoquot district, at the head of Camp bay, Muchalat arm.	" "	13	
17	Ous	Clayoquot district, on the southern shore of King's pass, Muchalat arm.	" "	24	
1	Numukamis	Barclay district, on Numukamis bay, Barclay sound.	Ohiet	1,700	
2	Nuchaquis	Barclay district, on eastern shore of Copper island, Barclay sound.	"	32	
3	Dochsupple	Barclay district, at the head of Poetts nook, Barclay sound.	"	21	
4	Sachsa	Barclay district, at the head of Grappler creek, Barclay sound, portion of section 28, township 1.	"	13	
5	Sachawil	Barclay district, on the northwest shore of Helby island.	"	7	
6	Kirby Point	Barclay district, on the northwest shore of Diana island.	"	35	Allotted by Commissioner O'Reilly, June 1, 1882. Surveyed 1883.
7	Hamilton Point	Barclay district, the southern portion of Diana island.	"	86	Final confirmation, March 24, 1885.
8	Haines Island	Barclay district, Barclay sound.	"	30	
9	Keeshan	Barclay district, at the southern entrance to Barclay sound, 1½ miles northeast of Cape Beale.	"	330	
10	Kichha	Barclay district, 1½ miles east of Cape Beale.	"	12	
11	Clutus	Barclay district, at western entrance to Pacheena bay.	"	105	
12	Anacla	Barclay district, at the head of Pacheena bay, the eastern half of section 8, township 1.	"	218	
13	Masit	Barclay district, at eastern entrance to Pacheena bay, east of Seabird island.	"	83	
1	Ahahswinis	Alberni district, on the left bank of the Somass river, 1½ miles from its mouth.	Opetchisaht	96	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

WEST COAST AGENCY, BRITISH COLUMBIA—*Concluded.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
2	Klehkoot	Alberni district, on the left bank of the Sonass river, 5½ miles from its mouth.	Opetchisaht	290	Allotted by Comm'r. O'Reilly, June 5, 1882. Surveyed, 1883.
3	Cous	Alberni district, on the west bank of the Alberni canal, at the second narrows.	"	132	Final confirmation, March 24, 1885.
4	Chuchakacook	Clayoquot district, on the west shore of Alberni canal, one mile north of Nahmint bay.	"	5	
1	Pacheena	Renfrew district, on San Juan harbour, and the south branch of the San Juan river.	Pacheena	153	Allotted by Comm'r. O'Reilly, June 7, 1882. Surveyed, 1890.
2	"	Renfrew district on San Juan harbour, and the north branch of the San Juan river.	"	156	Final confirmation, May 27, 1893.
3	Cullite	Renfrew district, 5 miles west of Port San Juan.	"	95	Allotted by Commissioner O'Reilly, June 17, 1889. Surveyed, 1892. Final confirmation, May 27, 1893.
4	Fishing station	Renfrew district, at the confluence of Harris creek and San Juan river, a portion of the N.W. ¼, section 12, township 10.	"		Allotted by Commissioner O'Reilly, October 30, 1894. Not surveyed. Approximate, 28 acres.
1	Tsahaheh	Alberni district, on the right bank of the Sonass river, about 3 miles from its month.	Seshart	1,030	Allotted by Commissioner O'Reilly, June 3, 1882. Surveyed, 1883. Final confirmation, March 24, 1885.
2	Alberni	Alberni district, on the eastern shore of Alberni canal, near its head.	"	156	
3	Iwachis	Barclay district, on the eastern shore of Alberni canal, at the first narrows.	"	26	
4	Tsoowa	Clayoquot district, on the eastern shore of Rainy bay, Barclay sound.	"	8	
5	Ahmitsa	Barclay district, on the southern shore of Seddall island, in Rainy bay.	"	26	Allotted by Commissioner O'Reilly, June 3, 1882. Surveyed, 1883. Final confirmation, March 24, 1885.
6	Cleho	Barclay district, on the eastern shore of Nettle island, Barclay sound	"	13	Allotted by Commissioner O'Reilly, June 3, 1882. Surveyed, 1893. Final confirmation, May 16, 1894.
7	Keith Island	Barclay district, in Barclay sound	"	17	
8	Equis	Clayoquot district, 1½ miles east of Lyall point, Barclay sound.	"	123	
9	Onoah	Barclay district, on the eastern shore of Village island, Barclay sound.	"	30	
1	Macoah	Clayoquot district, on Village passage, Barclay sound.	Toquart	124	Allotted by Commissioner O'Reilly, June 3, 1882.
2	Deekyakus	Clayoquot district, at the head of Toquat harbour, Barclay sound.	"	211	

3	Chequis	Clayoquot district, 1½ miles south of reserve No. 1 and west of David island, Barclay sound.	"	3	Surveyed, 1893. Final confirmation, May 16, 1894.
4	Chenatha	Clayoquot district, at the mouth of Chenatha river, Barclay sound.	"	62	
5	Dookqua	Clayoquot district, Alpha passage, Barclay sound.	"	18	Allotted by Commissioner O'Reilly, June 3, 1882. Surveyed, 1893. Final confirmation, May 16, 1894.
1	Cowishil	Clayoquot district, at the entrance to Uchucklesit harbour, Barclay sound	Uchucklesit	175	Allotted by Commissioner O'Reilly, June 5, 1882. Surveyed, 1883. Final confirmation, March 24, 1885.
2	Elhlateese	Clayoquot district, at the head of Uchucklesit harbour, Barclay sound.	"	400	
1	Ittatsoo	Clayoquot district, on the eastern shore of Uchulet arm, Barclay sound.	Uchulet	462	
2	Clakamucus	Clayoquot district, at the head of Uchulet arm, Barclay sound.	"	14	
3	Outs	Clayoquot district, at the mouth of Effingham inlet, Barclay sound.	"	12	Allotted by Commissioner O'Reilly, June 5, 1882. Surveyed, 1883. Final confirmation, March 21, 1885.
4	Quinaquilth	Clayoquot district, near the head of Effingham inlet, Barclay sound.	"	15	
5	Kleykleyhous	Clayoquot district, at the head of Nahmint bay, Alberni canal.	"	150	
6	Uchith	Clayoquot district, 1½ miles southeast of Wreck bay.	"	62·50	
7	Wya	Clayoquot district, ½ mile southeast of Wreck bay.	"	22·50	Allotted by Commissioner O'Reilly, June 18, 1889. Surveyed, 1893. Final confirmation, May 16, 1894.
8	Oo-oolth	Clayoquot district, at the northern extremity of Wreck bay.	"	42	
9	Quisitis	Clayoquot district, 1 mile northwest of Wreck bay.	"	12·50	

WILLIAMS LAKE AGENCY, BRITISH COLUMBIA.

1	Alexandria	Cariboo district, on the left bank of Fraser river, at the 197 mile post on the Cariboo wagon road.	Alexandria	554·50	100 inches of water recorded from Four-mile creek.
2	Hay ranch	Cariboo district, 3½ miles east of Alexandria.	"	60	
3		Cariboo district, on the right bank of Fraser river, adjoining lot 46, group 1, and opposite reserve No. 1.	"	1,234	12 inches of water recorded from a spring upon the reserve. The Alexandria Indians have the privilege of fishing on the right bank of Fraser river upon reserve No. 1. A grave-yard situated on lot 46, group 1, is also reserved. Allotted by Commissioner O'Reilly, July 4, 1881. Surveyed, 1883. Final confirmation, June 4, 1884.
1	Alkali Lake	Lillooet district, east of and adjoining lot 6, group 3.	Alkali Lake	596·50	
2		Lillooet district, 3 miles northeast of reserve No. 1.	"	800	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

WILLIAMS LAKE AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
3	....	Lillooet district, 1⅜ miles east of reserve No. 2.	Alkali Lake	180	
4	....	Lillooet district, ½ mile south of reserve No. 3.	"	540	
5	Alixton.	Lillooet district, 1½ miles southwest of reserve No. 4.	"	227	
6	Wycott's Flat.	Lillooet district, on the left bank of Fraser river, about 19 miles southwest of Alkali lake.	"	1,230	The right to the water retained by a dam at Harper's lake is recorded for this reserve.
7	....	Lillooet district, on the north shore of Lake la Hache, in section 10, township 39.	"	14	Includes a grave-yard situated on lot 319, group 1. The privilege of fishing on the left bank of Fraser river from the mouth of Chilcoten river to Little Dog creek. Allotted by Commissioner O'Reilly, July 15, 1881. Surveyed, 1883. Final confirmation, June 4, 1881.
8	Little Springs	Lillooet district, one-quarter of a mile northeast of reserve No. 7.	"	480	
9	Chdolicum	Lillooet district, three-quarters of a mile northeast of reserve No. 8.	"	1,400	
10	Loon Lake.	Lillooet district, one mile and three-eighths east of reserve No. 9	"	300	
11	Sampson's Meadow	Lillooet district, one-quarter of a mile west of lot 323, and half a mile southeast of reserve No. 12.	"	800	
12	....	Lillooet district, three-quarters of a mile southeast of reserve No. 4.	"	300	
13	....	Lillooet district, two miles and one-eighth east of reserve No. 14.	"	1,400	
14	Roper's Meadow	Lillooet district, one mile south of reserve No. 5.	"	80	Allotted by Commissioner O'Reilly, Aug. 30, 1895. Surveyed, 1897. Final confirmation, March 5, 1898.
1	Anaham's Flat	Cariboo district, on the left bank of the Chilcoten river, about forty-five miles from its mouth and about seven miles northwest of Hanceville.	Anaham	9,285	200 inches of water recorded from Big Flat or Anaham creek. 100 inches of water recorded from a creek near the eastern end of the reserve, about one mile from Anaham creek.
2	Anaham's Meadow	Cariboo district, about five miles north of the Indian village on reserve No. 1.	"	637	Allotted by Commissioner O'Reilly, July 8, 1887. Surveyed, 1894. Final confirmation, April 23, 1895.
1	Nequatque	Lillooet district, at the head of Anderson lake.	Anderson Lake	444	100 inches of water from Anderson or Mosquito creek recorded.
2	....	Lillooet district, one and three-quarter miles	"	20	

		south of Anderson lake.			
3	.	Lillooet district, one-quarter of a mile west of reserve No. 2.	"	20	25 inches of water recorded from a creek running through the reserve known as Quoquihatqua creek.
4		Lillooet district, five miles southwest of Anderson lake and on the banks of the Mosquito or Anderson river.	"	20	The privilege of fishing on Mosquito river through the whole length of reserve No. 1. A grave-yard situated on Mr. Chapman's land, lot 100, group 1. Allotted by Commissioner O'Reilly, Sept. 5, 1881. Surveyed, 1882. Final confirmation, June 4, 1884.
1	Bridge River	Lillooet district, on both banks of Bridge river from its confluence with Fraser river up stream.	Bridge River	9,621	25 inches of water recorded from creek one mile north of village; 50 inches of water recorded from a creek on south bank; 50 inches of water recorded from Camoo's creek; 10 inches of water recorded from a spring on the reserve; 50 inches of water recorded from a creek on the reserve on the north bank of Bridge river.
2	.	Lillooet district, on the right bank of Fraser river, two and one-quarter miles northeast of reserve No. 1.	"	140	50 inches of water recorded from Big creek. The privilege of fishing on both banks of Fraser river from half a mile below Bridge river upstream to Fountain fishery. Allotted by Commisioner O'Reilly, Sept. 1, 1881. Surveyed, 1884. Final confirmation, May 1, 1886.
1	Canim Lake	Lillooet district, on Bridge creek, one mile west of Canim lake.	Canim Lake	4,400	100 inches of water recorded from a creek on the north side of reserve.
2		Lillooet district, on Bridge creek, about half way between reserve No. 1 and the 100 mile post on the Cariboo wagon road.	"	160	Allotted by Commissioner O'Reilly, July 10, 1887. Surveyed, 1894. Final confirmation, April 23, 1895.
1		Lillooet district, on Canoe creek, in the northwest quarter section of section 16, township 10.	Canoe Creek	93	
2		Lillooet district, on Canoe creek, one mile and one-half from reserve No. 1, and adjoining sections 3-10, township 10.	"	4,460	100 inches of water recorded from Canoe creek.
3		Lillooet district, on the left bank of Fraser river; north of and adjoining townships 4-10.	"	6,931	20 inches of water recorded from a small stream running through the reserve.
4	Spilmouse	Lillooet district, on Canoe creek, about two miles above reserve No. 2.	"	400	
5	Fish Lake	Lillooet district, at the foot of Fish lake, one and one-half miles northeast of reserve No. 4.	"	105	
6	Toby Lake	Lillooet district, on the road from Canoe creek to the 57 mile post on the Cariboo road and six miles southeast of lot 141, group 1.	"	4,440	

SCHEDULE of Indian Reserves in the Dominion—*Continued*

WILLIAMS LAKE AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band	Area, Acres.	Remarks.
....	Grave-yard....	A grave-yard on the left bank of Canoe creek, one-half mile from its mouth, in section 1, township 1. A grave-yard situated in section 17, township 10. A grave-yard on the right bank of canoe creek, situated in section 8, township 10. A grave-yard seven chains north of Canoe creek, situated in section 15, township 10.	Canoe Creek....	.....	The Canoe Creek Indians have the privilege of fishing on both banks of Fraser river, from one and one-half miles above Canoe creek down stream five and one-half miles. The privilege of fishing in Green lake, situated four miles east of the 73 mile post on the Cariboo wagon road. Reserves 1, 2, 3 with grave-yards and fishing privileges allotted by Comm'r. O'Reilly July 21, 1884. Reserves 1, 2, 3 surveyed 1883. Final confirmation, June 4, 1884. Reserves 4, 5, 6 allotted by Comm'r. O'Reilly, Sept. 5, 1895. Unsurveyed.
1	Cayoosh Creek..... ...	Lillooet district, south of Cayoosh creek and west of, and adjoining lot 3, group 1, Lillooet district.	Cayoosh Creek.....	367	100 inches of water recorded from Cayoosh creek, 12 inches of water recorded from a spring on the reserve.
2	Pashilqua	Lillooet district, on the right bank of Fraser river, south of lot 3, group 1, and northeast of lot 7, group 1, and opposite Lillooet reserve No. 4.	"	785	25 inches of water from a spring running through the reserve. A grave-yard situated on lot 3, group 1. The privilege of fishing on the right bank of Fraser river from the mouth of Cayoosh creek down stream two and one half miles. The privilege of fishing in Cayoosh creek from its mouth up stream for one mile. Allotted by Comm'r. O'Reilly, August 29, 1881. Surveyed 1884. Final confirmation, May 1, 1886.
1	Clinton.	Lillooet district, west of the town of Clinton and north of and adjoining lot 3, group 5.	Clinton	225	25 inches of water recorded from a stream flowing through the reserve.
2	....	Lillooet district, at the 39 mile post on the road from Lillooet to Clinton, and east of and adjoining lot 9, group 1.	"	848	100 inches of water recorded from Kelly creek. A grave-yard situated to the east of the reserve. The privilege of fishing on both banks of Fraser river from Leon creek to the High Bar Indians fishery. Also the privilege of fishing in Green lake, situated four miles east of the 73 mile post on the Cariboo wagon road. Allotted by Comm'r O'Reilly, July 30, 1881. Surveyed, 1883. Final confirmation, June 4, 1884.

1	Dog Creek	Lillooet district, on Dog creek, about three miles from its confluence with Fraser river.	Dog Creek	357·50	50 inches of water recorded from Dog creek.
2		Lillooet district, on Dog creek, three miles and three quarters east of reserve No. 1.	"	540	
3		Lillooet district, on Dog creek, three quarters of a mile north northeast of reserve No. 2.	"	20	
3		Lillooet district, on the left bank of Fraser river above Dog creek and south of and adjoining Alkali lake reserve No. 6.	"	454	Includes a grave-yard situated on lot 5, group 6, west of reserve No. 1, and containing $\frac{6}{100}$ acres. The privilege of fishing on both banks of the Fraser river from the mouth of Dog creek up stream to the mouth of Harpers lake creek, a distance of one and one-half miles. Allotted by Comm'r. O'Reilly, July 19, 1881. Surveyed, 1883. Final confirmation, June 4, 1884.
1	Fountain	Lillooet district, on Fountain creek, about one-eighth mile south of the left bank of Fraser river, west of and adjoining lot 1, group 2.	Fountain	338	The unappropriated water in Fountain creek was recorded Feb. 23, 1891. The right to 300 inches of water was purchased from Chinamen and recorded May 8, 1895.
2		Lillooet district, on the left bank of Fraser river, south and west of Bridge river reserve No. 1.	"	166	
3		Lillooet district, on the left bank of Fraser river, south of Fourteen Mile creek on the road from Clinton to Fountain.	"	427	The privilege of fishing on both banks of Fraser river from Eleven Mile creek down stream to Bridge river fishery, about 4½ miles.
4		Lillooet district, on Fountain creek, 2¾ miles southeast of reserve No. 1.	"	160	
5		Lillooet district, on Fountain creek, about one quarter mile south of reserve No. 4.	"	240	Reserves Nos. 1, 2, 4, 5, 6, allotted by Commissioner O'Reilly, August 26, 1881. Surveyed, 1884. Final confirmation, May 1, 1886.
6		Lillooet district, about 1½ miles south of reserve No. 5, and about half a mile north of Lytton reserve No. 7.	"	533	Reserve No. 3, allotted May 1, 1886. Surveyed, 1884. Final confirmation, May 1, 1886.
1	High Bar	Lillooet district, on both banks of Fraser river, northwest of and adjoining lot 36, group 1.	High Bar	2,924	The right to 25 inches of water from a stream flowing through the reserve is recorded. The privilege of fishing on both banks of Fraser river from the confluence of Barney creek up stream to the northern boundary of the reserve. A grave-yard situated on lot 27, group 1, near its southern boundary. Allotted by Commissioner O'Reilly, July 25, 1881. Surveyed in 1883. Final confirmation, June 4, 1884.
1	Kluskus	Coast district, on the northern shore of Kluskus lake.	Kluskus	1,056	
2	Kloyadingli	Coast district, 5 miles east of reserve No. 1.	"	550	Allotted by Commissioner Vowell, Sept. 28, 1901.
3	Sundayman's Meadow	Coast district, 6½ miles east of reserve No. 1.	"	80	Not surveyed.
4	Yaladelassla	Coast district, on Euchiniko lake, about 10 miles northeast of reserve No. 1.	"	172	

SCHEDULE of Indian Reserves in the Dominion *Continued*

WILLIAMS LAKE AGENCY, BRITISH COLUMBIA—*Continued.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	.....	Lillooet district, west of and adjoining the town of Lillooet on the right bank of Fraser river at the confluence of Cayoosh creek.	Lillooet.....	919½	25 inches of water recorded from a spring one half mile east of reserve; 25 inches of water recorded from a spring near Cayoosh creek; 12 inches of water recorded from a spring near the Indian village.
2	Towinock.....	Lillooet district, on the right bank of Fraser river, eight miles below reserve No. 1.	"	220	50 inches of water recorded from a stream on the reserve.
3	Kilchult.....	Lillooet district, on the right bank of Fraser river, one mile north of reserve No. 3.	"	104	
4	McCartney's Flat.....	Lillooet district, on the left bank of Fraser river, 1½ miles southeast of the town of Lillooet and opposite Cayoosh reserve No. 2	"	423½	Includes a grave situated one-half mile north of reserve No. 4, and one-eighth mile east of Fraser river.
5	.....	Lillooet district, at the foot of Seton lake, at the effluence of Seton creek.	"	75½	Includes a grave-yard situated on lot 10, block 2, Lillooet suburban lots. The privilege of fishing on both banks of Fraser river from the confluence of Cayoosh creek upstream to one-half mile below Bridge river about four miles; also the privilege of fishing on the left bank of Fraser river from the mouth of Cayoosh creek down stream three miles. Also the privilege of fishing on both banks of Seton creek down stream one quarter mile from Seton lake. Allotted by Commissioner O'Reilly, August 31, 1881. Surveyed, 1881. Final confirmation, May 1, 1886.
1	Chilco Lake.....	Coast district, on Chilco lake, at the outlet of Nemaiah valley.	Nemaiah Valley	200	Allotted by Commissioner Vowell, September 20, 1899. Unsurveyed. Acreage only approximate.
2	Garden reserve.....	Coast district, in Nemaiah valley, about four and one-half miles from reserve No. 1.	"	80	
3	Fishery "	Coast district, in Nemaiah valley, at the foot of Conroe lake.	"	545	
4	Meadow "	Coast district, in Nemaiah valley, at the head of Conroe lake.	"	432	
1	Pavilion	Lillooet district, on the left bank of Fraser river, north of Pavilion creek.	Pavilion.....	2,318½	100 inches of water recorded from Pavilion creek.
2	Leon Creek.....	Lillooet district, on both banks of Leon creek, on the left bank of Fraser river, northwest of reserve No. 1.	"	1,167½	100 inches of water recorded from Leon creek; 25 inches of water from a creek at south end of reserve.
3	Marble Canyon.....	Lillooet district, on the road from Pavilion to Hat creek.	"	650	Includes a grave on lot 18, group 1, Lillooet district. Three separate graves on the trail from Pavilion to Hat creek. The privilege of fishing on both banks

					of Fraser river from Leon creek down stream 5½ miles. Allotted by Commissioner O'Reilly, August 4, 1881. Surveyed, 1884. Final confirmation, May 1, 1886.
1	...	Cariboo district, on the left bank of Fraser river, one mile south of the town of Quesnel.	Quesnel	1,367	
2	Fishery	Cariboo district, on the right bank of Fraser river, opposite the western end of reserve No. 1.	"	46½	
3	"	Cariboo district, at the foot of a small lake, about two miles east of the town of Quesnel.	"	39	
4	Rich Bar	Cariboo district, on the left bank of Fraser river, south of and nearly adjoining reserve No. 1.	"	235	20 inches of water recorded from a creek at the north end of the reserve; a grave on the left bank of Quesnel river, on lot 48; a grave on the left bank of Fraser river, 1 mile from the town of Quesnel, containing ·17 of an acre; a grave in Quesnel town between Front street and the Fraser river; a grave on lot 4, block 8, Quesnel town. Allotted by Commissioner O'Reilly, July 2, 1881. Surveyed, 1883. Final confirmation, June 4, 1884.
1	Slosh	Lillooet district, at the head and on the north shore of Seton lake.	Seton Lake	2,085	50 inches of water running through the reserve recorded; 20 inches of water recorded from a creek on reserve; 20 inches of water recorded from creek, 2 miles east of reserve; 100 inches of water recorded from Portage river; 50 inches of water recorded 1 mile west of mission.
2	Silicon	Lillooet district, on the north shore of Seton lake, about six miles from the outlet and opposite reserve No. 4.	"	139	
3	...	Lillooet district, on the south shore of Seton lake, southeast of reserve No. 1.	"	22	12 inches of water recorded from a spring.
4	...	Lillooet district, on the south shore of Seton lake, opposite reserve No. 4.	"	27	
5	...	Lillooet district, south of and adjoining reserve No. 1.	"	80	
6	Neciat	Lillooet district, at the foot of Anderson lake, on both sides of Portage river.	"	84	50 inches of water recorded from a creek running through the reserve. The privilege of fishing on Portage river from Anderson to Seton lake. Allotted by Commissioner O'Reilly, September 3, 1881. Surveyed, 1882. Final confirmation, June 4, 1881.
1	Soda Creek	Cariboo district, on the left bank of Fraser river, southeast of the village of Soda Creek.	Soda Creek	1,090	A record of 100 inches made July 21, 1890, to be taken from Soda creek.
2	Deep Creek	Cariboo district, east of the 168-mile post on the Cariboo wagon road.	"	4,120	100 inches of water recorded from 170-mile creek. Allotted by Commissioner O'Reilly, June 20, 1881. Surveyed, 1894. Final confirmation, April 23, 1895.

SCHEDULE of Indian Reserves in the Dominion—*Concluded*

WILLIAMS LAKE AGENCY, BRITISH COLUMBIA—*Concluded.*

No.	Name.	Where Situated.	Tribe or Band.	Area, Acres.	Remarks.
1	.....	Cariboo district, on the south bank of Chilcoten river, about 3½ miles west of Hanceville.	Stone.	3,925	100 inches of water recorded from Mintou creek.
2	Meadow reserve	Cariboo district, about eight miles southeast of reserve No. 1.	"	320	Includes a grave-yard on the trail from Hanceville to Anaham Flat. The privilege of fishing in the Chilcoten river from a point one and a half miles below Hanceville down stream for one mile. Allotted by Commissioner O'Reilly, July 11, 1887. Surveyed, 1894. Final confirmation, April 23, 1895.
1	Toosey.....	Cariboo district, on Riskie creek, one mile west of lot 66, group 1, in the sub-district of Chilcoten.	Toosey..	5,780	100 inches of water recorded from Riskie creek; 200 inches of water recorded from Mackin creek. Allotted by Commissioner O'Reilly, July 13, 1887. Surveyed, 1894. Final confirmation, April 23, 1895.
2	Meadow reserve.....	Cariboo district, about five miles northwest of the Indian village, on reserve No. 1.	"	560	
3	.....	Cariboo district, about two miles above the mouth of Riskie creek and on the right bank of Fraser river.	"	12·25	
1	Ulkatcho.....	Coast district, on the northern shore of Ulkatcho lake.	Ulkatcho	4,340	Allotted by Commissioner Vowell, Sept. 21, 1901. Not surveyed. Acreage approximate only.
1	Williams Lake...	Cariboo district, east of the head or eastern end of Williams lake.	Williams Lake....	4,074	1,464 acres of this reserve were purchased by the Dominion government from the 'Bates Estate' on March 5, 1881, for the use of the Indians.
2	.....	Cariboo district, one and three-eighth miles north of reserve No. 1.	"	120	This reserve includes a lake made by the Indians to obtain a water supply.
3	Meadow reserve	Cariboo district, two miles northeast of reserve No. 2.	"	180	
4	Fishery "	Cariboo district, on the left bank of Fraser river, at the confluence of San José creek.	"	7	
5	" "	Cariboo district, on the left bank of Fraser river at the confluence of Chimney creek.	"	56	
6	"	Cariboo district, at the foot of Williams lake, one quarter of a mile from the effluence of San José river.	"	6·50	
7	Grave-yard.....	Cariboo district, on the right bank of Chimney creek, on the property of Mr. Isnardy.	"	0·14	
8	"	Cariboo district, on the road from Williams lake to Soda creek and on the land owned by Mr. Pinchbeck.	"	0·25	Reserves Nos. 1–14, allotted by Commissioner O'Reilly, July 16, 1881. Surveyed, 1883. Final confirmation, June 4, 1884.
9	"	Cariboo district, on a trail from Williams lake to Soda creek, fifty links south of the	"	0·16	

			southern boundary of Mr. Pinchbeck's land, lot 6.					
10	"	.....	Cariboo district, seventy-five links south of reserve No. 9.	"	.....	0·1		
11	"	.....	Cariboo district, fifteen chains south of the southern boundary of Mr. Pinchbeck's land, lot 6.	"	.....	0·17		
12	"	.....	Cariboo district, north of the road from Williams lake to Soda creek, on Mr. Pinchbeck's land.	"	.....	0·16		
13	"	.....	Cariboo district, north of the road from Williams lake to Soda creek, on Mr. Pinchbeck's land.	"	.....	0·9		
14	"	.....	Cariboo district, near the outlet of Williams lake, on Mr. Pinchbeck's land.	"	.....	0·3		
15	Carpenter Mountain	.....	Cariboo district, at the 156 mile post on the Cariboo wagon road.	"	.....	168·76	Allotted by Commissioner O'Reilly, November 26, 1894. Surveyed, 1897. Final confirmation, March 5, 1898.	